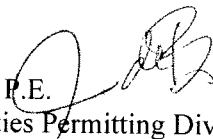


MEMO

June 1, 2010



TO: Concerned Citizens

FROM: Jeffrey P. deBessonnet, P.E.   
Director, Water Facilities Permitting Division

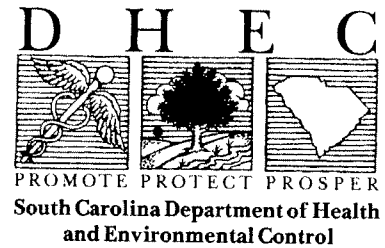
RE: SCE&G/Wateree Permit Modification Decision  
NPDES Permit SC0002038

DHEC staff has reviewed the comments received during the comment period, including the public hearing held on March 9, 2010. Our decision is to issue the permit today with changes. A copy of the permit is on DHEC's web page at <http://www.scdhec.gov/environment/water/>. The following changes have been made to the permit:

1. The monitoring frequency for arsenic has been changed from quarterly to monthly.
2. A reopener statement has been added to Part V.A.8 that will allow the permit to be modified based on any future regulation or law changes to arsenic water quality standards. Also, wording has been added stating that permit modifications may only be made for cause in accordance with R.61-9.122.62(d) and/or (e).
3. The language allowing construction storm water to be discharged without additional permits has been removed from Part V.E.5.
4. A permit condition has been added which requires SCE&G to remove a net amount of ash from the coal ash basins over the life of the NPDES permit to reduce levels of pollutants that may be leaching into the groundwater.
5. Part V.E.6 of the previous permit has been revised to require regular inspections of the ash basins by qualified personnel and submittal of reports of the inspections to the Department.

Enclosed with this memo is a response to comments and on the reverse side of this memo is information on how to request a final review conference with the DHEC Board, i.e., to initiate an appeal of this staff decision. As noted in the enclosure, a request for a final review conference must be made within 15 days of DHEC mailing this notice.

# Appeal Procedures



The issuance of an NPDES permit by the S.C. Department of Health and Environmental Control (Department) becomes the final agency decision 15 days after notice of the decision has been mailed to the applicant or respondent, unless a written request for final review is filed with the Department. This Department decision relies on the administrative record, which includes the permit rationale, and other supporting documentation contained in the permit file.

An applicant, permittee, licensee, or affected person who wishes to appeal this decision must file a written request for final review with the Clerk of the Board at the following address or by facsimile at 803-898-3323:

Clerk of the Board  
SC DHEC  
2600 Bull Street  
Columbia, SC 29201

The request for final review should include the following:

1. The grounds on which the Department's decision is challenged and the specific changes sought in the decision,
2. A statement of any significant issues or factors the Board should consider in deciding how to handle the matter, and
3. A copy of the Department's decision or action under review.

If the 15th day occurs on a weekend or State holiday, the request is due to be received by the Clerk of the Board on the next working day. The request for final review must be received by the Clerk of the Board by 5:00 p.m. on the date it is due. If a timely request for final review is filed with the Clerk of the Board, the Clerk will provide additional information regarding procedures.

The Board of Health and Environmental Control has 60 days from the date of receipt of a request for final review to conduct a final review conference. The conference may be conducted by the Board, its designee, or a committee of three members of the Board appointed by the chair.

If a final review conference is not conducted within 60 days, the Department decision becomes the final agency decision, and a party may request a contested case hearing before the Administrative Law Court within 30 days after the deadline for the final review conference.

## **SCE&G/Wateree Public Comments (in italics) and Responses (2010 NPDES Permit Modification)**

1. *Some commenters noted that the condition allowing discharge of construction storm water does not adequately protect water quality standards.*

The Department has removed the allowance for construction storm water to be discharged under this NPDES permit.

2. *Some commenters noted that removal of limits on arsenic constitutes antibacksliding and is not protective of the river.*

Antibacksliding rules are not engaged when there is no longer any reasonable potential to violate water quality standards. Also, antibacksliding does not apply to an effluent limit that has not been in effect and met consistently.

3. *Some commenters noted that use of 7Q10 and mean annual flow and mixing zones are not protective under certain conditions.*

Regulation 61-68.C.4 states the following with regards to aquatic life and human health protection:

(a)(1): The applicable critical flow conditions for aquatic life criteria shall be defined as 7Q10 or tidal conditions as determined by the Department. The numeric criteria of this regulation are not applicable to waters of the State when the flow rate is less than 7Q10 except as prescribed below.

(b)(1): The applicable critical flow conditions for human health shall be defined as annual average flow for carcinogens, 7Q10 (or 30Q5 if provided by the applicant) for noncarcinogens, or tidal conditions as determined by the Department. The applicable critical flow conditions for organoleptic criteria shall be defined as annual average flow or tidal conditions as determined by the Department. The numeric criteria of this regulation are not applicable to waters of the State when the flow rate is less than the annual average flow for carcinogens or 7Q10 (or 30Q5 if provided by the applicant) for noncarcinogens, except as prescribed below.

Based on these regulations, the Department has used the appropriate flow conditions to derive permit limitations using 7Q10 and annual average flow conditions even when drought or other flow conditions below 7Q10 have occurred. The Department has allowed use of a surface water mixing zone to determine the need for permit limits in accordance with Regulation 61-68.C.10.

4. *Some commenters noted that the permit should provide further recommendation and requirements to protect the Wateree River from seepage areas.*

The NPDES modification accounts for the ground water contribution of arsenic, including the seeps. The seeps are being reviewed under DHEC's current enforcement order. In this context, SCE&G is developing a plan to address the seeps.

5. *Some commenters noted that monitoring for iron and manganese should not be removed from the permit.*

Iron and manganese were removed from the Water Quality Standards regulation in 2008. Based on this regulatory change, monitoring is no longer needed.

6. *Some commenters noted that DHEC should provide additional language that insures the permittee collects a representative sample if collected on a day other than the 1<sup>st</sup> Monday of every month.*

The NPDES permit contains a "boilerplate" condition in Part II.J.1.a(1) that states that all samples must be "representative" of the monitored activity, regardless of the day collected.

7. *Some commenters suggested that DHEC should require regular monitoring of landfill/runoff leachate.*

With regards to monitoring of this wastewater, the monitoring is to be performed at the final discharge point from the ash ponds. Monitoring of wastewater discharges typically occurs after all treatment has been provided; this includes the ash ponds as part of the total treatment system because they provide additional settling. In an NPDES permit, the monitoring is designed to provide information on the effluent for comparison with water quality standards instream. Requiring additional sampling on the landfill leachate alone would not provide data for instream water quality comparison.

Included in the permit, however, is a condition that requires additional, more comprehensive sampling to be performed after the landfill and scrubber systems begin operation. This data will provide actual, not just estimated, characteristics of the effluent. Changes to the permit may be warranted upon review of the data.

8. *Some commenters noted that DHEC should deny SCE&G's request for modification of the NPDES permit based on the levels of arsenic in soil and water.*

Arsenic is discharged from the facility to the river both in wastewater, in accordance with the NPDES permit, and in groundwater that receives arsenic from the ash basins and flows towards the river. The groundwater discharge includes seeps that outcrop along the edge of the river. The groundwater discharge is being investigated under a separate DHEC enforcement action.

DHEC has calculated the amount of arsenic that will be discharged to the river from these two sources (wastewater and groundwater) based on the volume of water that will discharge to the river from these sources and the arsenic concentrations in the wastewater and groundwater. These calculations show that the levels of arsenic in the river will remain below the levels needed for protection of human health and in stream aquatic life in accordance with USEPA-approved, state water-quality standards.

The NPDES permit actions and environmental investigations conducted under the DHEC enforcement action at the facility have focused on arsenic in the wastewater and groundwater because arsenic primarily moves through the environment in water. It is understood that elevated levels of arsenic in soil are present in and below the ash pond and where water containing elevated levels of arsenic contact the soil.

9. *Some commenters noted that DHEC should protect the ground water from more arsenic.*

Ground water protection is mainly being addressed via a separate DHEC enforcement action. As a permit condition, we have added a requirement for a specified net amount of ash to be removed from the ash basin over the life of the permit.

10. *Some commenters suggested that arsenic monitoring be performed monthly not quarterly.*

DHEC has changed the frequency of sampling of the effluent from Outfall 03A from quarterly to monthly.

11. *Comments were provided noting that changing the Water Quality Standards does not mean DHEC has to remove the monitoring or limits from the permit.*

The prior limits were based on standards in effect at the time. The current proposed permit is based on the standards in effect now. There is no basis for a permit more stringent than that required by current rules.

12. *One commenter noted that the waters of the Wateree River, the Santee River and the Congaree River have been the site of studies on federally endangered shortnose sturgeon and mussels species.*

First, the aquatic life protection standards for arsenic are less stringent than the human health protection standard. The calculated instream value of arsenic is not near the aquatic life standard. Also, we have received no information from the US Fish and Wildlife Service regarding a concern related to these endangered species.

13. *One commenter noted that even though SCDHEC has established a TMDL for mercury for fish at both upstream (CW-206 and CW-214) and downstream (CW-698) sites, SCDHEC does not set mercury limits in the draft permit.* This draft permit modification did not address a modification to mercury. For information, there is no TMDL for mercury at these sites or on the Wateree River, but the waterbody is impaired for fish consumption due to mercury for a large portion of the river.

14. *One commenter noted that SCDHEC's technical justification includes questionable calculations. SCE&G assumed a "worst case" arsenic concentration of 1900 mg/l, even though the limit in the consent agreement is 3000 mg/l, and levels as high as 4051 mg/l have been observed in groundwater monitoring wells. In other words, SCDHEC is using a maximum contaminant concentration more than twice as low as observed contaminant concentrations.*

The calculation in question used the highest arsenic value detected in a seep near the river and is considered to be representative of high arsenic concentrations in groundwater near the river. If the concentration used in the calculation were doubled, as suggested by the commenter, the contribution to the river from the groundwater including the seeps, even during low flow conditions (7Q10 flow levels) in the river, would still be below levels of concern for the protection of human health and instream aquatic life in accordance with USEPA-approved, state water-quality standards.

15. *One comment stated, "SCDHEC allowed a SCE&G consultant, rather than its own scientific staff, to address the question of arsenic bioaccumulation in fish at the public hearing. The consultant incorrectly stated that arsenic in fish is harmless to humans. In fact, both inorganic and organic arsenic can accumulate in fish, with the former being the dangerous form of arsenic."*

The person that responded to the question at the hearing is a DHEC employee. He stated that DHEC has not yet developed action levels for the consumption of fish based on the concentration of arsenic in fish. He discussed how arsenic in fish is viewed by the Agency for Toxic Substance and Disease Registry (ATSDR). ATSDR is a federal agency that prepares detailed Toxicological Profiles for many harmful chemicals and conducts human health assessments for USEPA. The ATSDR Toxicological Profile for Arsenic dated 2007 contains the following statements regarding arsenic in fish:

- Page 23 - "Although some fish and shellfish take in arsenic, which may build up in tissues, most of this arsenic is in an organic form called arsenobetaine (commonly called "fish arsenic") that is much less harmful."
- Page 63 - "Several organic arsenicals are found to accumulate in fish and shellfish. These derivatives (mainly arsenobetaine and arsenocholine, also referred to as "fish arsenic") have been studied by several researchers and have been found to be essentially nontoxic (Brown et al. 1990; Cannon et al. 1983; Charbonneau et al. 1978; Kaise et al. 1985; Luten et al. 1982; Siewicki 1981; Tam et al. 1982; Yamauchi et al. 1986)."

Toxicological Profile for Arsenic dated 2007 can be found at the following web address:

<http://www.atsdr.cdc.gov/toxprofiles/tp2.pdf>.

USEPA is in the process of revising the recommended human health ambient water quality criteria for arsenic. When a new criteria is established by USEPA, DHEC will likely pursue adoption in the state water quality standards (Regulation 61-68) and will include the consumption of organisms such as fish. The criteria will consider both the bioconcentration factor and the amount of organic and inorganic arsenic that occurs in fish.

16. *Some commenters requested SCDHEC develop a plan to retire the ash ponds and replace them with lined ponds farther away from the river, and require SCE&G to clean up the groundwater contamination from the ponds.*  
The plan for dealing with groundwater associated with the ash ponds is being handled by a separate enforcement action. As a permit condition, we have added a requirement for a specified net amount of ash to be removed from the ash basin over the life of the permit.

17. *Some commenters suggested that discharge monitoring reports prior to the current date should be posted on EPA's ECHO system. Future Discharge Monitoring Reports should be made publicly available, both electronically and at Eastover Branch of the Richland County Public Library.*

DHEC does not have a say in how EPA handles their ECHO database or its update frequency. All Discharge Monitoring Reports are publicly available through DHEC's Freedom of Information office.

18. *One commenter noted that removing arsenic limitations for SCE&G's NPDES permit at the Wateree Station will threaten the viability of the Wateree River Blue Trail and other rivers with high recreational value in South Carolina and that removing discharge limits for arsenic and reducing monitoring requirements of the permit fails to protect the Congaree National Park.*

The most stringent application of the water quality standards (aquatic life/human health) was the human health value. It is based on annual average flow conditions, not an acute exposure concern and considers that the current levels of discharge are not near the standards. The proposed permit is protective of all the referenced waters.

19. *Some commenters noted that they are concerned that arsenic may accumulate at dangerous levels.*  
See response to comment No. 15.

20. *Several commenters asked for testing of all private drinking water & irrigation wells in vicinity. Comments were provided regarding reliance on well water and keeping drinking water safe.*

The groundwater that contains arsenic from the ash basins is found in the shallow water-table aquifer that discharges to the nearby Wateree River. Therefore, arsenic contamination in the shallow groundwater beneath the basins poses little risk to local water wells. Arsenic released from the ash basins to the groundwater is being addressed through a DHEC enforcement action. Under this enforcement action, groundwater investigations and testing will continue at the site to monitor potential risks to human health and the environment and to determine what remedial actions are appropriate for the site. If future investigations suggest that a private well has the

potential to be impacted by arsenic from the site, then DHEC will have the private well tested. Meanwhile, if folks living near the site are concerned about the water quality in their well, they can have their water tested by a lab and/or contact the local DHEC office at 803-896-0620.

21. *Several commenters asked for tests for bio-accumulation of contaminants in fish and sediment sampling.*

See response to comment No. 15. Environmental impacts related to arsenic released from the ash basins to the groundwater, which eventually discharges to surface water (Wateree River), are being addressed through a DHEC enforcement action. Under this enforcement action, groundwater, seeps, sediment, surface water from the Wateree River and fish tissue have been investigated and tested for the presence of arsenic. Investigations and testing will continue under this enforcement action to monitor potential impacts to human health and the environment and to determine what remedial actions are appropriate for the site.

22. *One commenter suggested that the ash ponds should be rebuilt and lined as soon as possible.*

This action, if determined to be necessary, will be handled in an enforcement action, not as a permit condition.

23. *One commenter suggested that treatment for landfill leachate to remove arsenic be performed before routing to ponds.*

The existing and proposed ponds are acceptable methods of wastewater treatment for the leachate. There is no basis to require treatment beyond what is necessary to comply with the NPDES permit. Also, SCE&G would decide the best overall treatment approach.

24. *One commenter noted that the whole permit (and the amendments) also apparently ignores the fact that arsenic (and other contaminants) enters the channel water through seeps in the current retaining wall and from shallow groundwater discharge into the channel.*

See responses to Comments #8 and #14.

25. *One commenter noted that monitoring arsenic, even with higher limits, is necessary to look for problems and have a record of past discharges when problems are discovered. Arsenic may get diluted in the Wateree River, but it WILL biogeochemically concentrate in nearby sediments, water, plant life, and animal life.*

Wastewater discharges permitted under this NPDES permit meet EPA-approved, state water-quality standards for arsenic including the instream standard for the protection of aquatic life. Environmental impacts related to arsenic released from the ash basins to the groundwater, which eventually discharges to surface water (Wateree River), are being addressed through a separate DHEC enforcement action. See also response to Comment #15.

26. *Some folks were concerned that they were not made aware of the meeting and want to be notified of future meetings/public hearings.*

Notice of the public hearing was placed on DHEC's website at

<http://www.scdhec.net/environment/water/publicnote/html/eqpnwater.aspx?SortBy=title&PFilter=npdes> on

February 3, 2010 and remained there until March 19, 2010. Notice was also placed in The State newspaper on February 3, 2010 and sent to a mailing list of folks interested in public notices for this facility or county.

27. *Standards applicable to arsenic - Regulation Process. Several people had questions about how regulations are changed under state laws that govern DHEC rules.*

When DHEC wants to set or revise a water quality standard, there is a lengthy process that begins with a "notice of drafting." This notice, which is published in the State Register, indicates the start of a regulation development process. After getting comments on proposed changes, DHEC staff request permission from the DHEC Board to publish actual proposed changes for public input. After gathering input, DHEC's Board holds a hearing on the proposed changes. If the DHEC Board approves changes, then these changes are forwarded to the State Legislature for review and approval. An exception under state law would be that if DHEC must make a specific change(s) to comply with federal rules to maintain DHEC's delegation status, those changes do not require legislative review (i.e., the process is complete with approval of the DHEC Board). Normally, state regulation processes must be approved by the federal Environmental Protection Agency (EPA), also.

In the case of the most recent changes to arsenic, the regulation development process began in 2007 and concluded in 2008 with legislative approval and, subsequently, EPA approval. If DHEC were to make regulation changes regarding arsenic or other pollutant parameters in the future, the process would be as described above.

BOARD:  
Paul C. Aughtry, III  
Chairman  
Edwin H. Cooper, III  
Vice Chairman  
Steven G. Kisner  
Secretary



C. Earl Hunter, Commissioner

*Promoting and protecting the health of the public and the environment*

BOARD:  
Henry C. Scott  
M. David Mitchell, MD  
Glenn A. McCall  
Coleman E. Buckhouse, MD

## **CERTIFIED MAIL/RETURN RECEIPT REQUESTED**

June 1, 2010

MARK FERGUSON  
SCE&G  
1426 MAIN ST MAIL CODE P05  
COLUMBIA, SC 29218

Re: Department Decision  
SCE&G/WATEREE STATION Modification  
NPDES Permit # SC0002038  
Richland County

Dear Mr. Ferguson:

Enclosed is the modified National Pollutant Discharge Elimination system (NPDES) Permit for the above referenced facility. The permit is issued with the following changes to the draft permit that was public noticed:

1. The monitoring frequency for arsenic has been changed from quarterly to monthly.
2. A reopener statement has been added to Part V.A.8 that will allow the permit to be modified based on future regulation or law changes to arsenic water quality standards. Also, wording has been added to this reopener language stating that permit modifications may only be made for cause in accordance with R.61-9.122.62(d).and/or (e).
3. The language allowing construction storm water to be discharged without additional permits has been removed from Part V.E.5.
4. A permit condition has been added which requires SCE&G to remove a net amount of ash from the coal ash basins over the life of the NPDES permit to reduce levels of pollutants that may be leaching into the groundwater.
5. Part V.E.6 of the previous permit has been revised to require regular inspections of the ash basins by qualified personnel and submittal of reports of the inspections to the Department.

Please note the effective date of the modification on the permit. The issuance of this modification to the permit by the S.C. Department of Health and Environmental Control (Department) becomes the final agency decision 15 days after notice of the decision has been mailed to the applicant or respondent, unless a written request for final review is filed with the Department. This Department decision relies on the administrative record, which includes the permit rationale, and other supporting documentation contained in the permit file.

An applicant, permittee, licensee, or affected person who wishes to appeal this decision must file a written request for final review with the Clerk of the Board at the following address or by facsimile at 803-898-3323:

Clerk of the Board  
SC DHEC  
2600 Bull Street  
Columbia, SC 29201

The request for final review should include the following:

1. The grounds on which the Department's decision is challenged and the specific changes sought in the decision,
2. A statement of any significant issues or factors the Board should consider in deciding how to handle the matter, and
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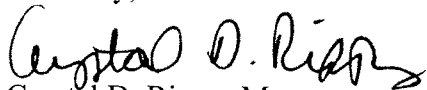
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The Board of Health and Environmental Control has 60 days from the date of receipt of a request for final review to conduct a final review conference. The conference may be conducted by the Board, its designee, or a committee of three members of the Board appointed by the chair.

If a final review conference is not conducted within 60 days, the Department decision becomes the final agency decision, and a party may request a contested case hearing before the Administrative Law Court within 30 days after the deadline for the final review conference.

If you have any questions about the technical aspects of this permit, please contact Melinda G Vickers at 803-898-4186. Information pertaining to adjudicatory matters may be obtained by contacting the Legal Office, SCDHEC, 2600 Bull Street, Columbia, SC 29201, or by calling them at (803)898-3350.

Sincerely,



Crystal D. Rippey, Manager  
Industrial Wastewater Permitting Section

Enclosures

cc w/encl: EPA  
NPDES Permit Administration  
Melanie Hindman, BOW/WPC Enforcement  
Harry L Mathis, Columbia EQC Office, Region 3  
COLUMBIA EQC LAB  
Melinda G Vickers, BOW





South Carolina Department of Health  
and Environmental Control

# ***National Pollutant Discharge Elimination System Permit***

for Discharge to Surface Waters

This Permit Certifies That

***South Carolina Electric & Gas Company  
Wateree Steam Station***

has been granted permission to discharge from a facility located at

***142 Wateree Station Road  
Eastover, South Carolina  
Richland County***

to receiving waters named

***Wateree River***

in accordance with limitations, monitoring requirements and other conditions set forth herein. This permit is issued in accordance with the provisions of the Pollution Control Act of South Carolina (S.C. Code Sections 48-1-10 *et seq.*, 1976), Regulation 61-9 and with the provisions of the Federal Clean Water Act (PL 92-500), as amended, 33 U.S.C. 1251 *et seq.*, the "Act."

**Jeffrey P. deBessonnet, P.E., Director  
Water Facilities Permitting Division**

***Issue Date: August 29, 2008***

***Expiration Date: December 31, 2012***

***Effective Date: October 1, 2009***

***Permit No.: SC0002038***

***Modification Issue Date: June 1, 2010***

***Modification Effective Date: July 1, 2010***



South Carolina Department of Health  
and Environmental Control

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Wateree Steam Station***

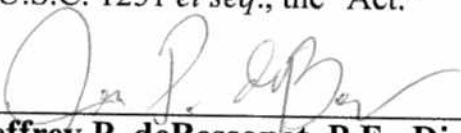
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**Jeffrey P. deBessonnet, P.E., Director  
Water Facilities Permitting Division**

***Issue Date: August 29, 2008***

***Expiration Date: December 31, 2012***

***Effective Date: October 1, 2009***

***Permit No.: SC0002038***

***Modification Issue Date: June 1, 2010***

***Modification Effective Date: July 1, 2010***

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## **PART I. Definitions**

Any term not defined in this Part has the definition stated in the Pollution Control Act or in “Water Pollution Control Permits”, R.61-9 or its normal meaning.

- A. The “Act”, or CWA, shall refer to the Clean Water Act (Formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended.
- B. The “average” or “arithmetic mean” of any set of values is the summation of the individual values divided by the number of individual values.
- C. “Basin” (or “pond”) means any in-ground or earthen structure designed to receive, treat, store, temporarily retain and/or allow for the infiltration/evaporation of wastewater.
- D. “Blowdown” means the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentration in amounts exceeding limits established by best engineering practices.
- E. “Bottom ash” means the ash that drops out of the furnace gas stream in the furnace and in the economizer sections. Economizer ash is included when it is collected with bottom ash (40 CFR 423.11(f)).
- F. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility.
- G. “Chemical metal cleaning waste” means any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning (40 CFR 423.11(c)).
- H. “Coal pile runoff” means the rainfall runoff from or through any coal storage pile (40 CFR 423.11(m)).
- I. A “composite sample” shall be defined as one of the following four types:
  - 1. An influent or effluent portion collected continuously over a specified period of time at a rate proportional to the flow.
  - 2. A combination of not less than 8 influent or effluent grab samples collected at regular (equal) intervals over a specified period of time and composited by increasing the volume of each aliquot in proportion to flow. If continuous flow measurement is not used to composite in proportion to flow, the following method will be used: An instantaneous flow measurement should be taken each time a grab sample is collected. At the end of the sampling period, the instantaneous flow measurements should be summed to obtain a total flow. The instantaneous flow measurement can then be divided by the total flow to determine the percentage of each grab sample to be combined. These combined samples form the composite sample.
  - 3. A combination of not less than 8 influent or effluent grab samples of equal volume but at variable time intervals that are inversely proportional to the volume of the flow. In other words, the time interval between aliquots is reduced as the volume of flow increases.
  - 4. If the effluent flow varies by less than 15 percent, a combination of not less than 8 influent or effluent grab samples of constant (equal) volume collected at regular (equal) time intervals over a specified period of time.

All samples shall be properly preserved in accordance with Part II.J.4. Continuous flow or the sum of instantaneous flows measured and averaged for the specified compositing time period shall be used with composite results to calculate mass.

- J. “Daily discharge” means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.
- K. “Daily maximum” is the highest average value recorded of samples collected on any single day during the calendar month.
- L. “Daily minimum” is the lowest average value recorded of samples collected on any single day during the calendar month.
- M. The “Department” or “DHEC” shall refer to the South Carolina Department of Health and Environmental Control.
- N. “Fly ash” means the ash that is carried out of the furnace by the gas stream and collected by mechanical precipitators, electrostatic precipitators, and/or fabric filters. Economizer ash is included when it is collected with fly ash (40 CFR 423.11(e)).
- O. “Free available chlorine” shall mean the value obtained using the amperometric titration method for free available chlorine described in *Standard Methods for the Examination of Water and Wastewater* (40 CFR 423.11(l)).
- P. The “geometric mean” of any set of values is the Nth root of the product of the individual values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).
- Q. A “grab sample” is an individual, discrete or single influent or effluent portion of at least 100 milliliters collected at a time representative of the discharge and over a period not exceeding 15 minutes and retained separately for analysis.
- R. “Groundwater” means the water below the land surface found in fractured rock or various soil strata.
- S. “Low volume waste sources” include, but are not limited to: wastewaters from wet scrubber air pollution control systems, ion exchange water treatment systems, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems. Sanitary and air conditioning wastes are not included (40 CFR 423.11(b)).
- T. The “maximum or minimum” is the highest or lowest value, respectively, recorded of all samples collected during the calendar month. These terms may also be known as the instantaneous maximum or minimum.

- U. “Metal cleaning waste” means any wastewater resulting from cleaning [with or without chemical cleaning compounds] any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning (40 CFR 423.11(d)).
- V. “Monitoring well” means any well used to sample groundwater for water quality analysis or to measure groundwater levels.
- W. The “monthly average”, other than for fecal coliform and enterococci, is the arithmetic mean of all samples collected in a calendar month period. The monthly average for fecal coliform and enterococci bacteria is the geometric mean of all samples collected in a calendar month period. The monthly average loading is the arithmetic average of all daily discharges made during the month.
- X. “Once through cooling water” means water passed through the main cooling condensers in one or two passes for the purpose of removing waste heat (40 CFR 423.11(g)).
- Y. The “PCA” shall refer to the Pollution Control Act (Chapter 1, Title 48, Code of Laws of South Carolina).
- Z. The “practical quantitation limit” (PQL) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. It is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specific sample weights, volumes, and processing steps have been followed. It is also referred to as the reporting limit.
- AA. “Quarter” is defined as the first three calendar months beginning with January and each group of three calendar months thereafter (also known as calendar quarters).
- BB. “Quarterly average” is the arithmetic mean of all samples collected in a quarter.
- CC. “Recirculated cooling water” means water which is passed through the main condensers for the purpose of removing waste heat, passed through a cooling device for the purpose of removing such heat from the water then passed again, except for blowdown, through the main condenser (40 CFR 423.11(h)).
- DD. “Severe property damage” means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- EE. “Sludge” means industrial sludge. Industrial sludge is a solid, semi-solid, or liquid residue generated during the treatment of industrial wastewater in a treatment works. Industrial sludge includes, but is not limited to, industrial septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from industrial sludge. Industrial sludge does not include ash generated during the firing of industrial sludge in an industrial sludge incinerator or grit and screenings generated during preliminary treatment of industrial wastewater in a treatment works. Industrial sludge by definition does not include sludge covered under 40 CFR Part 503 or R.61-9.503.
- FF. “Total residual chlorine” (or total residual oxidants for intake water with bromides) means the value obtained using the amperometric method for total residual chlorine described in 40 CFR Part 136. The term “average

concentration” as it relates to chlorine discharge means the average of analyses made over a single period of chlorine release which does not exceed two hours (40 CFR 423.11(a) and (k)).

- GG. “Upset” means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- HH. “Wastewater” means industrial wastewater. Industrial wastewater is wastewater generated from a federal facility, commercial or industrial process, including waste and wastewater from humans when generated at an industrial facility.

## **PART II. Standard Conditions**

### **A. Duty to comply**

The permittee must comply with all conditions of the permit. Any permit noncompliance constitutes a violation of the Clean Water Act and the Pollution Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. The Department's approval of wastewater facility plans and specifications does not relieve the permittee of responsibility to meet permit limits.

1. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
2. Failure to comply with permit conditions or the provisions of this permit may subject the permittee to civil penalties under S.C. Code Section 48-1-330 or criminal sanctions under S.C. Code Section 48-1-320. Sanctions for violations of the Federal Clean Water Act may be imposed in accordance with the provisions of 40 CFR Part 122.41(a)(2) and (3).
3. A person who violates any provision of this permit, a term, condition or schedule of compliance contained within this NPDES permit, or the State law is subject to the actions defined in the State law.

### **B. Duty to reapply**

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. A permittee with a currently effective permit shall submit a new application 180 days before the existing permit expires, unless permission for a later date has been granted by the Department. The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.

### **C. Need to halt or reduce activity not a defense**

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

### **D. Duty to mitigate**

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

### **E. Proper operation and maintenance**



1. The permittee shall at all times properly operate and maintain in good working order and operate as efficiently as possible all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance based on design facility removals, adequate funding, adequate operator staffing and training and also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
2. Power Failures. In order to maintain compliance with effluent limitations and prohibitions of this permit, the permittee shall either:
  - a. provide an alternative power source sufficient to operate the wastewater control facilities;
  - b. or have a plan of operation which will halt, reduce, or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.
3. The permittee shall develop and maintain at the facility a complete Operations and Maintenance Manual for the waste treatment facilities. The manual shall be made available for on-site review during normal working hours. The manual shall contain operation and maintenance instructions for all equipment and appurtenances associated with the waste treatment facilities and land application system, if applicable. The manual shall contain a general description of the treatment process(es), the operational procedures to meet the requirements of E.1 above, and the corrective action to be taken should operating difficulties be encountered.
4. The permittee shall provide for the performance of daily treatment facility inspections by a certified operator of the appropriate grade as defined in Part V.E of this permit. The Department may make exceptions to the daily operator requirement in accordance with R.61-9.122.41(e)(3)(ii). The inspections shall include, but should not necessarily be limited to, areas which require visual observation to determine efficient operation and for which immediate corrective measures can be taken using the O & M manual as a guide. All inspections shall be recorded and shall include the date, time, and name of the person making the inspection, corrective measures taken, and routine equipment maintenance, repair, or replacement performed. The permittee shall maintain all records of inspections at the permitted facility as required by the permit, and the records shall be made available for on-site review during normal working hours.
5. The name and grade of the operator of record shall be submitted to DHEC/Bureau of Water/Water Pollution Control Division prior to placing the facility into operation. A roster of operators associated with the facility's operation and their certification grades shall also be submitted with the name of the "operator-in-charge." Any changes in operator or operators shall be submitted to the Department as they occur.

F. Permit actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

G. Property rights

This permit does not convey any property rights of any sort, or any exclusive privilege nor does it authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

H. Duty to provide information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

I. Inspection and entry

The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act and Pollution Control Act, any substances or parameters at any location.

J. Monitoring and records

1. a. (1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.  
  
(2) Samples shall be reasonably distributed in time, while maintaining representative sampling.  
  
(3) No analysis, which is otherwise valid, shall be terminated for the purpose of preventing the analysis from showing a permit or water quality violation.
- b. Flow Measurements.  
  
(1) Where primary flow meters are required, appropriate flow measurement devices and methods consistent with accepted scientific practices shall be present and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10% from the true discharge rates throughout the range of

expected discharge volumes. The primary flow device, where required, must be accessible to the use of a continuous flow recorder.

- (2) Where permits require an estimate of flow, the permittee shall maintain at the permitted facility a record of the method(s) used in estimating the discharge flow (e.g., pump curves, production charts, water use records) for the outfall(s) designated on limits pages to monitor flow by an estimate.
  - (3) Records of any necessary calibrations must be kept.
2. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by R.61-9.503 or R.61-9.504), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.
  3. Records of monitoring information shall include:
    - a. The date, exact place, and time of sampling or measurements;
    - b. The individual(s) who performed the sampling or measurements;
    - c. The date(s) analyses were performed;
    - d. The individual(s) who performed the analyses;
    - e. The analytical techniques or methods used; and
    - f. The results of such analyses.
  4. a. Analyses for required monitoring must be conducted according to test procedures approved under 40 CFR Part 136, equivalent test procedures approved by the Department or other test procedures that have been specified in the permit.

In the case of sludge use or disposal, analysis for required monitoring must be conducted according to test procedures approved under 40 CFR Part 136, test procedures specified in R.61-9.503 or R.61-9.504, equivalent test procedures approved by the Department or other test procedures that have been specified in the permit.

- b. Unless addressed elsewhere in this permit, the permittee shall use a sufficiently sensitive analytical method that achieves a value below the derived permit limit stated in Part III. If more than one method of analysis is approved for use, the Department recommends for reasonable potential determinations that the permittee use the method having the lowest practical quantitation limit (PQL) unless otherwise specified in Part V of the permit. For the purposes of reporting analytical data on the Discharge Monitoring Report (DMR):

- (1) Analytical results below the PQL conducted using a method in accordance with Part II.J.4.a above shall be reported as zero (0). Zero (0) shall also be used to average results which are below the PQL. When zero (0) is reported or used to average results, the permittee shall report, in the "Comment Section" or in an attachment to the DMR, the analytical method used, the PQL achieved, and the number of times results below the PQL were reported as zero (0).
  - (2) Analytical results above the PQL conducted using a method in accordance with Part II.J.4.a shall be reported as the value achieved. When averaging results using a value containing a "less than," the average shall be calculated using the value and reported as "less than" the average of all results collected.
  - (3)(a) The mass value for a pollutant collected using a grab sample shall be calculated using the 24-hour totalized flow for the day the sample was collected (if available) or the instantaneous flow at the time of the sample and either the concentration value actually achieved or the value as determined from the procedures in (1) or (2) above, as appropriate. Grab samples should be collected at a time representative of the discharge.
  - (b) The mass value for a pollutant collected using a composite sample shall be calculated using the 24-hour totalized flow measured for the day the sample was collected and either the concentration value actually achieved or the value as determined from the procedures in (1) or (2) above, as appropriate.
5. The PCA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$25,000 or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment provided by the Clean Water Act is also by imprisonment of not more than 4 years.

K. Signatory requirement.

1. All applications, reports, or information submitted to the Department shall be signed and certified.
  - a. Applications. All permit applications shall be signed as follows:
    - (1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:
      - (a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or
      - (b) The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather

complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

- (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
  - (3) For a municipality, State, Federal, or other public agency or public facility: By either a principal executive officer, mayor, or other duly authorized employee or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
    - (a) The chief executive officer of the agency, or
    - (b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator, Region IV, EPA).
- b. All reports required by permits, and other information requested by the Department, shall be signed by a person described in Part II.K.1.a of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- (1) The authorization is made in writing by a person described in Part II.K.1.a of this section;
  - (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and,
  - (3) The written authorization is submitted to the Department.
- c. Changes to authorization. If an authorization under Part II.K.1.b of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part II.K.1.b of this section must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.
- d. Certification. Any person signing a document under Part II.K.1.a or b of this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."
2. The PCA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including

monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$25,000 per violation, or by imprisonment for not more than two years per violation, or by both.

L. Reporting requirements

1. Planned changes.

The permittee shall give written notice to DHEC/Bureau of Water/Water Facilities Permitting Division as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in R 61-9.122.29(b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part II.L.8 of this section.
- c. The alteration or addition results in a significant change in the permittee's sewage sludge or industrial sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan (included in the NPDES permit directly or by reference);

2. Anticipated noncompliance.

The permittee shall give advance notice to the DHEC/Bureau of Water/Water Pollution Control Division of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers.

This permit is not transferable to any person except after written notice to the DHEC/Bureau of Water/NPDES Administration. The Department may require modification or revocation and reissuance of the permit to change the name of permittee and incorporate such other requirements as may be necessary under the Pollution Control Act and the Clean Water Act.

- a. Transfers by modification. Except as provided in paragraph b of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under R.61-9.122.62(e)(2)), or a minor modification made (under R.61-9.122.63(d)), to identify the new permittee and incorporate such other requirements as may be necessary under CWA.
- b. Other transfers. As an alternative to transfers under paragraph a of this section, any NPDES permit may be transferred to a new permittee if:

- (1) The current permittee notifies the Department at least 30 days in advance of the proposed transfer date in Part II.L.3.b(2) of this section;
  - (2) The notice includes U.S. EPA NPDES Application Form 1 and a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
  - (3) Permits are non-transferable except with prior consent of the Department. A modification under this section is a minor modification which does not require public notice.
4. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.
- a. Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Department for reporting results of monitoring of sludge use or disposal practices including the following:
    - (1) Effluent Monitoring: Effluent monitoring results obtained at the required frequency shall be reported on a Discharge Monitoring Report Form (EPA Form 3320-1). The DMR is due postmarked no later than the 28th day of the month following the end of the monitoring period. One original and one copy of the Discharge Monitoring Reports (DMRs) shall be submitted to:

S.C. Department of Health and Environmental Control  
Bureau of Water/Water Pollution Control Division  
Data and Records Management Section  
2600 Bull Street  
Columbia, South Carolina 29201
    - (2) Groundwater Monitoring: Groundwater monitoring results obtained at the required frequency shall be reported on a Groundwater Monitoring Report Form (DHEC 2110) postmarked no later than the 28th day of the month following the end of the monitoring period. One original and one copy of the Groundwater Monitoring Report Form (DHEC 2110) shall be submitted to:

S.C. Department of Health and Environmental Control  
Bureau of Water/Water Monitoring, Assessment and Protection Division  
Groundwater Quality Section  
2600 Bull Street  
Columbia, South Carolina 29201
    - (3) Sludge, Biosolids and/or Soil Monitoring: Sludge, biosolids and/or soil monitoring results obtained at the required frequency shall be reported in a laboratory format as stated in Part V of the permit. Two copies of these results shall be submitted to:

S.C. Department of Health and Environmental Control  
Bureau of Water/Water Pollution Control Division  
Data and Records Management Section  
2600 Bull Street  
Columbia, South Carolina 29201

- (4) All other reports required by this permit shall be submitted at the frequency specified elsewhere in the permit to:

S.C. Department of Health and Environmental Control  
Bureau of Water/Water Pollution Control Division  
Data and Records Management Section  
2600 Bull Street  
Columbia, South Carolina 29201

- b. If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in R.61-9.503 or R.61-9.504, or as specified in the permit, all valid results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Department. The permittee has sole responsibility for scheduling analyses, other than for the sample date specified in Part V, so as to ensure there is sufficient opportunity to complete and report the required number of valid results for each monitoring period.
- c. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Department in the permit.

5. Twenty-four hour reporting

- a. The permittee shall report any non-compliance, which may endanger health or the environment. Any information shall be provided orally to local DHEC office within 24 hours from the time the permittee becomes aware of the circumstances. During normal working hours call:

County	EQC Region	Phone No.
Fairfield, Lexington, Newberry, Richland	Region 3 –Columbia EQC Office	803-896-0620

\*After-hour reporting should be made to the 24-Hour Emergency Response telephone number 803-253-6488 or 1-888-481-0125 outside of the Columbia area.

A written submission shall also be provided to the address in Part II.L.4.a(4) within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

- b. The following shall be included as information which must be reported within 24 hours under this paragraph.
- (1) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See R.61-9.122.44(g)).
- (2) Any upset which exceeds any effluent limitation in the permit.



(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit to be reported within 24 hours (See R 61-9.122.44(g)). If the permit contains maximum limitations for any of the pollutants listed below, a violation of the maximum limitations shall be reported orally to the DHEC/Bureau of Water/Water Pollution Control Division within 24 hours or the next business day.

(a) Whole Effluent Toxicity (WET),

(b) tributyl tin (TBT), and

(c) any of the following bioaccumulative pollutants:

$\alpha$ BHC	Mercury
$\beta$ BHC	Mirex
$\delta$ BHC (Lindane)	Octachlorostyrene
BHC	PCBs
Chlordane	Pentachlorobenzene
DDD	Photomirex
DDE	1,2,3,4-Tetrachlorobenzene
DDT	1,2,4,5-Tetrachlorobenzene
Dieldrin	2,3,7,8-TCDD
Hexachlorobenzene	Toxaphene
Hexachlorobutadiene	

c. The Department may waive the written report on a case-by-case basis for reports under Part II.L.5.b of this section if the oral report has been received within 24 hours.

6. Other noncompliance.

The permittee shall report all instances of noncompliance not reported under Part II.L.4 and 5 of this section and Part IV at the time monitoring reports are submitted. The reports shall contain the information listed in Part II.L.5 of this section.

7. Other information.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information to the Water Facilities Permitting Division. This information may result in permit modification, revocation and reissuance, or termination in accordance with Regulation 61-9.

8. Existing manufacturing, commercial, mining, and silvicultural dischargers.

In addition to the reporting requirements under Part II.L.1-7 of this section, all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the DHEC/Bureau of Water/Water Pollution Control Division of the Department as soon as they know or have reason to believe:

a. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

- (1) One hundred micrograms per liter (100 µg/l);
  - (2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
  - (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application;  
or
  - (4) The level established by the Department in accordance with section R.61-9.122.44(f).
- b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed in the highest of the following “notification levels”:
- (1) Five hundred micrograms per liter (500 µg/l);
  - (2) One milligram per liter (1 mg/l) for antimony;
  - (3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with R.61-9.122.21(g)(7).
  - (4) The level established by the Department in accordance with section R.61-9.122.44(f).

M. Bypass

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Part II.M.2 and 3 of this section.
2. Notice.
  - a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least ten days before the date of the bypass to the DHEC/Bureau of Water/ Water Facilities Permitting Division.
  - b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Part II.L.5 of this section.
3. Prohibition of bypass
  - a. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
    - (1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

- (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
- (3) The permittee submitted notices as required under Part II.M.2 of this section.
- b. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in Part II.M.3.a of this section.

#### N. Upset

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Part II.N.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
  - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
  - b. The permitted facility was at the time being properly operated; and
  - c. The permittee submitted notice of the upset as required in Part II.L.5.b(2) of this section.
  - d. The permittee complied with any remedial measures required under Part II.D of this section.
3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

#### O. Misrepresentation of Information

1. Any person making application for a NPDES discharge permit or filing any record, report, or other document pursuant to a regulation of the Department, shall certify that all information contained in such document is true. All application facts certified to by the applicant shall be considered valid conditions of the permit issued pursuant to the application.
2. Any person who knowingly makes any false statement, representation, or certification in any application, record, report, or other documents filed with the Department pursuant to the State law, and the rules and regulations pursuant to that law, shall be deemed to have violated a permit condition and shall be subject to the penalties provided for pursuant to 48-1-320 or 48-1-330.

### Part III. Limitations and Monitoring Requirements

#### A. Effluent Limitations and Monitoring Requirements

1. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial number 01A: Recirculated cooling tower blowdown (internal outfall to Outfall 03A(and 03B))

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
	Mass		Concentration			
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Sampling Frequency	Sample Type
Flow	MR <sup>1</sup> , MGD	MR <sup>1</sup> , MGD			1/week	Estimate <sup>2</sup>
Free Available Chlorine (FAC) <sup>3</sup>			0.2 mg/l	0.5 mg/l	1/week	Multiple Grabs <sup>4</sup>
Chromium, total <sup>5</sup>			0.2 mg/l	0.2 mg/l	1/month	Grab
Zinc, total <sup>5</sup>			1.0 mg/l	1.0 mg/l	1/month	Grab

<sup>1</sup> MR: Monitor and Report

<sup>2</sup> See Part II.J.1.b

<sup>3</sup> See Part I.O and V.A.4.

<sup>4</sup> Multiple grabs shall consist of grab samples collected at the approximate beginning of the period of Total Residual Chlorine (TRC) and/or Free Available Chlorine (FAC) discharge and once every twenty (20) minutes until TRC or FAC is no longer present.

<sup>5</sup> These parameters are only required to be monitored when chromium and zinc-containing cooling tower maintenance chemicals are used.

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at or near the cooling tower discharge but prior to mixing with the receiving stream or any other waste stream.
- b. The discharge of one hundred twenty-six (126) toxic pollutants, except chromium and zinc, is prohibited in detectable amounts in chemicals added for cooling tower maintenance. The permittee may demonstrate compliance with such limitations by either routinely sampling and analyzing for the pollutants in the discharge or providing engineering calculations which demonstrate that the regulated pollutants are not detectable in the discharge. Results of sampling or calculations to meet this requirement shall be submitted as an attachment to the DMRs on an annual basis. See Attachment 4 of the Fact Sheet for this permit for a list of PQLs and methods for these pollutants to be used to determine detectable amounts.

2. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to discharge from outfall serial numbers 03A and 03B: cooling tower blowdown from 01A, low volume wastes, ash transport wastewaters, landfill runoff/leachate, coal pile runoff, miscellaneous power plant wastewaters, and storm water

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS					MONITORING REQUIREMENTS	
	Mass		Concentration				
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Instantaneous Maximum <sup>1</sup>	Sampling Frequency	Sample Type
Flow	MR <sup>2</sup> , MGD	MR <sup>2</sup> , MGD				1/month	Instantaneous <sup>3</sup>
pH			Min <sup>1</sup> 6.0 su		Max 8.5 su	1/month	Grab
Total Suspended Solids (TSS)			30 mg/l		100 mg/l	1/month	Grab
Oil & Grease			15 mg/l	20 mg/l		1/month	Grab
Temperature				MR <sup>2</sup> °F		1/quarter	Grab
Ammonia, total			MR <sup>2</sup> mg/l <sup>4,5</sup>	MR <sup>2</sup> mg/l <sup>4,5</sup>		1/quarter	Grab
Mercury, total			MR <sup>2</sup> µg/l <sup>4,5</sup>	MR <sup>2</sup> µg/l <sup>4,5</sup>		1/quarter	Grab
Phosphorus, total	MR <sup>2</sup> lb/d		MR <sup>2</sup> mg/l <sup>4,5</sup>	MR <sup>2</sup> mg/l <sup>4,5</sup>		1/quarter	Grab
Arsenic, total			MR <sup>2</sup> mg/l <sup>4,5</sup>	MR <sup>2</sup> mg/l <sup>4,5</sup>		1/month	Grab

<sup>1</sup>See Part I.T

<sup>2</sup>MR: Monitor and Report

<sup>3</sup>See Part II.J.1.b

<sup>4</sup>See Part V.A.8

<sup>5</sup>See Part V.A.9

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): after treatment and prior to mixing with the receiving stream or any other waste stream.
- b. Use of Outfall No. 03B shall be limited to emergency conditions necessary to assure dike stability and shall not be used for routine discharge. Notification of each emergency use and the reason for the emergency shall be made per Part II.L.5.

B. Whole Effluent Toxicity and Other Biological Limitations and Monitoring Requirements

1. During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge from serial numbers 03A and 03B: cooling tower blowdown from 01A, low volume wastes, ash transport wastewaters, landfill runoff/leachate, coal pile runoff, miscellaneous power plant wastewaters, and storm water

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
<i>Ceriodaphnia dubia</i> Acute Whole Effluent Toxicity @ ATC= 15%	-	0*	1/quarter	Grab

\* Report "0" if test passes or "1" if test fails in accordance with Part V.B.1

- a. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: at or near the discharge, but prior to mixing with the receiving waters.

2. During the period beginning on the effective date and lasting through the expiration date, the permittee is authorized to discharge from outfall serial numbers 03A and 03B: cooling tower blowdown from 01A, low volume wastes, ash transport wastewaters, landfill runoff/leachate, coal pile runoff, miscellaneous power plant wastewaters, and storm water

Such discharge shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Monthly Average	Maximum <sup>1</sup>	Measurement Frequency	Sample Type
<i>Ceriodaphnia dubia</i> Chronic Whole Effluent Toxicity @ CTC= 2.3%	MR % <sup>2</sup>	MR % <sup>2</sup>	1/month <sup>3</sup>	Grab
<i>Ceriodaphnia dubia</i> Chronic Whole Effluent Toxicity-Reproduction @ CTC=2.3%	MR % <sup>2</sup>	MR % <sup>2</sup>	1/month <sup>3</sup>	Grab
<i>Ceriodaphnia dubia</i> Chronic Whole Effluent Toxicity- 7-day Survival @ CTC=2.3%	MR % <sup>2</sup>	MR % <sup>2</sup>	1/month <sup>3</sup>	Grab

<sup>1</sup>Maximum is defined as the highest percent effect of all valid tests performed during the monitoring period following the procedures in Part V.B.2.d.

<sup>2</sup>See Part V.B.2 for additional toxicity reporting requirements. MR = Monitor and Report.

<sup>3</sup>Valid tests must be separated by at least 7 days (from the time the first sample is taken to start one test until the time the first sample is taken to start a different test). There is no restriction on when a new test may begin following a failed or invalid test.

- a. Samples used to demonstrate compliance with the discharge limitations and monitoring requirements specified above shall be taken at or near the final point-of-discharge but prior to mixing with the receiving waters or other waste streams.
- b. Valid test results from split samples shall be reported on the DMR. For reporting an average on the DMR, individual valid results for each test from a split sample are averaged first to determine a sample value. That value is averaged with other sample results obtained in the reporting period and the average of all sample results reported. For reporting the maximum on the DMR, individual valid results for each test from a split sample are averaged first to determine a sample value. That value is compared to other sample results obtained in the reporting period and the maximum of all sample results reported. For the purposes of reporting, split samples are reported as a single sample regardless of the number of times it is split. All laboratories used shall be identified on the DMR attachment.

C. Groundwater Monitoring Requirements

See Part V.C.

D. Sludge Monitoring Requirements

See Part V.D

E. Soil Monitoring Requirements

none



**Part IV. Schedule of Compliance**

A. Schedule(s)

None

- B. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each scheduled date.

## **Part V. Other Requirements**

### **A. Effluent Requirements**

1. There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall the effluent cause a visible sheen on the receiving waters.
2. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.
3. The Permittee shall route metal cleaning wastes to a separate holding basin, which shall have no discharge to surface waters or other plant streams.
4. Neither free available chlorine or total residual chlorine may be discharged from any single generating unit for more than two (2) hours in any one day, and not more than one unit in any plant may discharge Free Available Chlorine or Total Residual Chlorine at any one time unless the permittee can demonstrate to the Department that the units in a particular location cannot operate at or below this level of chlorination.
5. Unless authorized elsewhere in this Permit, the permittee must meet the following requirements concerning maintenance chemicals for the following waste streams: once-through noncontact cooling water, recirculated cooling water, boiler blowdown water, and air washer water. Maintenance chemicals shall be defined as any man-induced additives to the above-referenced waste streams.
  - a. Detectable amounts of any of the one hundred and twenty-six priority pollutants is prohibited in the discharge, if the pollutants are present due to the use of maintenance chemicals.
  - b. Slimicides, algicides and biocides are to be used in accordance with registration requirements of the Federal Insecticides, Fungicide and Rodenticide Act.
  - c. The use of maintenance chemicals containing bis(tributyltin) oxide is prohibited.
  - d. Any maintenance chemicals added to the above-referenced waste streams must degrade rapidly, either due to hydrolytic decomposition or biodegradation.
  - e. Discharges of maintenance chemicals added to waste streams must be limited to concentrations which protect indigenous aquatic populations in the receiving stream.
  - f. The permittee must keep sufficient documentation on-site that would show that the above requirements are being met. The information shall be made available for on-site review by Department personnel during normal working hours.
  - g. The occurrence of instream problems may necessitate the submittal of chemical additive data and permit modification to include additional monitoring and limitations.
6. The company shall notify the South Carolina Department of Health and Environmental Control in writing no later than sixty (60) days prior to instituting use of any additional maintenance chemicals in the cooling water system. Such notification shall include:

- a. Name and general composition of the maintenance chemical
  - b. Quantities to be used
  - c. Frequency of use
  - d. Proposed discharge concentration
  - e. EPA registration number, if applicable
  - f. Aquatic toxicity information
7. The permittee is required to submit a completed Form 2C for the discharge from Outfall 03A within 21 months of the start of operations discharging from both the landfill runoff/leachate basin and the FGD scrubber blowdown system. The permittee shall provide at least four (4) samples for all parameters in Section V Part A, Part B, and Part C.1M-15M, 1V-31V, and 1A-11A. These four samples shall be separated such that one sample is collected during each season (i.e., spring, summer, fall and winter) after operations at these facilities begin discharging. Sampling should begin after three months of operation of the scrubbers and landfill runoff/leachate basin.
  8. This permit may be reopened to include additional monitoring and/or limitations for ammonia, mercury, and phosphorus based on monitoring results obtained. This permit may be reopened to include additional monitoring and/or limitations based on changes to law or regulation related to water quality standards for arsenic. Modifications may be performed for cause in accordance with Regulation 61-9.122.62(d) and/or (e).
  9. Where the permit limitation in Part III is below the practical quantitation limit (PQL), the PQL and analytical method stated below shall be considered as being in compliance with the permit limit. Additionally, where the permit requires only monitoring and reporting (MR) in Part III, the PQL and analytical method stated below shall be used for reporting results.

Parameter	Analytical Method	PQL
Ammonia	SM4500NH <sub>3</sub> C, F, G or H, or EPA 350.1 (Rev. 2.0 1993)	0.10 mg/l
Arsenic	200.8, 200.9, SM3113B	0.0050 mg/l
Mercury	1669(sampling)/1631E (analysis)	0.0005 µg/l
Phosphorus	365.1(Rev. 2.0 1993), 365.3, 365.4, or SM 4500 P, E, or F	0.050 mg/l

## B. Whole Effluent Toxicity and Other Biological Requirements

### 1. Acute Toxicity -For the requirements identified in Part III.B.1:

- a. A 48-hour static acute toxicity test shall be conducted at the frequency stated in Part III.B Effluent Toxicity Limitations and Monitoring Requirements using a control and the acute test concentration (ATC) of 15%. The test shall be conducted using *Ceriodaphnia dubia* as the test organism using EPA Method 2002.0 in accordance with "Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms," EPA 821/R-02/012 (October 2002). The test shall be conducted at 25°C ±1°C.
- b. If the test group *Ceriodaphnia dubia* survival is less than the control group survival at the 0.05α level of a left-tailed Fisher's exact test, the test shall be deemed a failure.

- c. The permittee must report on the discharge monitoring report (DMR) form whether the test passes or fails at the specified ATC. If the test fails, the number "1" shall be placed on the form. If the test passes, the number "0" shall be placed on the form. If more than one test is performed during a monitoring period (including tests from split samples), the worst case result shall be reported on the DMR. The DMR Attachment for Toxicity Test Results, DHEC Form 3420, shall also be completed and submitted with the DMR.
  - d. A test shall be invalidated if any part of Method 2002.0 is not followed or if the laboratory is not certified at the time the test is conducted.
  - e. All valid toxicity test results shall be submitted on the DHEC Form 3710 entitled "DMR Attachment for Toxicity Test Results" in accordance with Part II.L.4. In addition, results from all invalid tests must be appended to DMRs, including lab control data. The permittee has sole responsibility for scheduling toxicity tests so as to ensure there is sufficient opportunity to complete and report the required number of valid test results for each monitoring period.
  - f. The permittee is responsible for reporting a valid test during each monitoring period. However, the Department acknowledges that invalid tests may occur. All of the following conditions must be satisfied for the permittee to be in compliance with Whole Effluent Toxicity (WET) testing requirements for a particular monitoring period when a valid test was not obtained.
    - (1) A minimum of five (5) tests have been conducted which were invalid in accordance with Part V.B.1.d above;
    - (2) The data and results of all invalid tests are attached to the DMR;
    - (3) At least one additional State-certified laboratory is used after two (2) consecutive invalid tests were determined by the first laboratory. The name(s) and lab certification number(s) of the additional lab(s) shall be reported in the comment section of the DMR; and
    - (4) A valid test was reported during each of the previous three reporting periods.
- If these conditions are satisfied, the permittee may enter "H" in the appropriate boxes on the toxicity DMR and add the statement to the Comment Section of the DMR that "H indicates invalid tests."
- g. This permit may be modified based on new information that supports a modification in accordance with Regulation 61-9.122.62 and Regulation 61-68.D.

2. Chronic Toxicity - For the requirements identified in Part III.B.2:

- a. A *Ceriodaphnia dubia* three brood chronic toxicity test shall be conducted at the frequency stated in Part III.B, Effluent Toxicity Limitations and Monitoring Requirements, using the chronic test concentration (CTC) of 2.3% and the following test concentrations: 0% (control), 1.0%, 10%, 32% and 100% effluent. The permittee may add additional test concentrations without prior authorization from the Department provided that the test begins with at least 10 replicates in each concentration and all data is used to determine permit compliance.
- b. The test shall be conducted using EPA Method 1002.0 in accordance with "Short-Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,"

EPA/821/R-02/013 (October 2002).

- c. The permittee shall use the linear interpolation method described in “Short-Term Methods for Estimating Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,” EPA/821/R-02/013 (October 2002), Appendix M to estimate the percent effect on survival and reproduction at the CTC according to the equations in d below.

- d. The linear interpolation estimate of percent effect is  $\left(1 - \frac{M_{CTC}}{M_1}\right) * 100$  if the CTC is a tested

$$\left(1 - \frac{M_J - \frac{M_{J+1} - M_J}{C_{J+1} - C_J} * C_J + \frac{M_{J+1} - M_J}{C_{J+1} - C_J} * CTC}{M_1}\right) * 100.$$

concentration. Otherwise, it is

- e. The permittee shall report the percent effect on both *Ceriodaphnia dubia* survival and reproduction at the CTC. Overall percent effect is the greater of the percent effect on survival and reproduction. On the DMR Attachment, the permittee shall also report the IC25 and, using the same test data, the 48-hour chronic LC50.
- f. A test shall be invalidated if any part of Method 1002.0 is not followed or if the laboratory is not certified at the time the test is conducted.
- g. All valid toxicity test results shall be submitted on the DHEC Form 3710 entitled “DMR Attachment for Toxicity Test Results” in accordance with Part II.L.4. In addition, results from all invalid tests must be appended to DMRs, including lab control data. The permittee has sole responsibility for scheduling toxicity tests so as to ensure there is sufficient opportunity to complete and report the required number of valid test results for each monitoring period.
- h. The permittee is responsible for reporting a valid test during each monitoring period. However, the Department acknowledges that invalid tests may occur. All of the following conditions must be satisfied for the permittee to be in compliance with Whole Effluent Toxicity (WET) testing requirements for a particular monitoring period when a valid test was not obtained.
- (1) A minimum of five (5) tests have been conducted which were invalid in accordance with Part V.B.1.e above;
  - (2) The data and results of all invalid tests are attached to the DMR;
  - (3) At least one additional State-certified laboratory is used after two (2) consecutive invalid tests were determined by the first laboratory. The name(s) and lab certification number(s) of the additional lab(s) shall be reported in the comment section of the DMR; and
  - (4) A valid test was reported during each of the previous three reporting periods.

If these conditions are satisfied, the permittee may enter “H” in the appropriate boxes on the toxicity

DMR and add the statement to the Comment Section of the DMR that “H indicates invalid tests.”

- i. This permit may be modified based on new information that supports a modification in accordance with Regulation 61-9.122.62 and Regulation 61-68.D.

#### C. Groundwater Requirements

A groundwater monitoring plan should be submitted to the Ground Water Quality Section (see address in Part II.L.4.a(2)) for approval within six months of completing construction of the landfill runoff/leachate basin. The plan should include a minimum of three monitoring wells, with at least two located downgradient and within 50 feet of the basin. Analytical parameters should be similar to those specified in Mixing Zone Agreement #01-053-W, with the addition of total mercury, established for the SCE&G/Wateree Facility in February 2001.

#### D. Sludge Requirements

1. All waste oil and solid and hazardous waste shall be properly disposed of in accordance with the rules and regulations of the Bureau of Land and Waste Management of SCDHEC.
2. The on-site landfill will primarily receive the gypsum solids from the FGD scrubber, though it is approved to accept fly ash and bottom ash as well. Fly/bottom ash, including ash recovered from the ash basins and gypsum may also be sent off-site for recycling or beneficial reuse. The permittee shall obtain written approval from the Industrial Wastewater Permitting Section prior to sending any ash material off-site for disposal.
3. Written approval from the Department must be obtained prior to disposal of other sludges or use of other sludge disposal methods.

#### E. Other Conditions

1. The wastewater treatment plants are each assigned a classification of Group I-P/C. The Environmental Certification Board Rules require that a Grade D-P/C operator be assigned to operate these facilities.
2. The permittee shall maintain an all weather access road to the wastewater treatment plant and appurtenances at all times.
3. The permittee shall monitor all parameters consistent with conditions established by this permit on the 1st Thursday of every calendar month in which sampling is required, unless otherwise approved by this Department. Chronic whole effluent toxicity (WET) monitoring shall be performed on the 1st Monday of every calendar month in which sampling is required, unless otherwise approved by this Department. Acute WET monitoring shall be performed on the 1st Monday of any calendar month within the quarter in which sampling is required, unless otherwise approved by this Department. If any sampling day falls on a holiday, sampling shall be conducted on the next business day. If no discharge occurs on this day, the permittee shall collect an effluent sample during the reporting period on a day when there is a discharge or report “no discharge” for the reporting period for all parameters. Additional monitoring as necessary to meet the frequency requirements of this permit shall be performed by the permittee.

4. The permittee shall continue to maintain a Best Management Practices (BMP) plan to identify and control the discharge of significant amounts of oils and the hazardous and toxic substances listed in 40 CFR Part 117 and Tables II and III of Appendix D to 40 CFR Part 122. The plan shall include a listing of all potential sources of spills or leaks of these materials, a method for containment, a description of training, inspection and security procedures, and emergency response measures to be taken in the event of a discharge to surface waters or plans and/or procedures which constitute an equivalent BMP. Sources of such discharges may include materials storage areas; in-plant transfer, process and material handling areas; loading and unloading operations; plant site runoff; and sludge and waste disposal areas. The BMP plan shall be developed in accordance with good engineering practices, shall be documented in narrative form, and shall include any necessary plot plans, drawings, or maps. The BMP plan shall be maintained at the plant site and shall be available for inspection by EPA and Department personnel.
5. The permittee shall not store coal, soil nor other similar erodible materials in a manner in which runoff is uncontrolled, nor conduct construction activities in a manner which produces uncontrolled runoff unless such uncontrolled runoff has been specifically approved by SCDHEC. "Uncontrolled" shall mean without sedimentation basin or other controls approved by SCDHEC.
6. Coal Ash Basin Requirements: A coal ash basin is defined as a wastewater basin designed to hold and/or treat wastewater containing coal ash from the generation of power at a coal-fired power plant.
  - a. Coal Ash Basin Operation and Maintenance
    - (1) Coal ash basins used to hold or treat wastewater shall be operated and maintained to minimize the discharge of pollutants to waters of the State, except as authorized under this permit.
    - (2) Operation, and maintenance of these types of basins shall be in accordance with Regulation 61-9.122, the South Carolina Pollution Control Act and all other relevant State and Federal regulations.
  - b. Coal Ash Basin Integrity Inspections
    - (1) Coal ash basins shall be inspected at least monthly by qualified personnel with knowledge and training in impoundment integrity. In addition, impoundments shall be inspected annually by a qualified, State-registered professional engineer. At least one additional inspection by qualified personnel shall be performed within 7 days after a 10-year, 24 hour precipitation event at the site.
    - (2) Inspections shall, at a minimum, include the following: observations of dams, dikes and toe areas for erosion, cracks or bulges, seepage, or wet or soft soil; changes in geometry, the depth and elevation of the impounded water, sediment or slurry, or freeboard; changes in vegetation such as overly lush, dead or unnaturally tilted vegetation or tress or other vegetation growing in or on the basin or basin dikes; and any other changes which may indicate a potential compromise to impoundment integrity. When practicable, piezometers or other instrumentation may be installed as a means to aid monitoring of basin integrity.
    - (3) Within 24 hours of discovering changes (e.g., significant increases in seepage or seepage carrying sediment) that indicate an imminent threat to the structural integrity of the basin, the permittee shall begin procedures to remediate the problem, if remediation is determined to be necessary.

c. Reporting and Recordkeeping Requirements for Coal Ash Basins

- (1) Within 5 days of discovering any changes in the basin that indicate a potential compromise to the structural integrity, the permittee must notify the Department in writing at the address in Part II.L.4(a)(4) describing the findings of the inspection, corrective measures taken or planned, and a timeline for implementation of the planned measures.
- (2) The permittee shall submit an annual report to the Department summarizing findings of all monitoring activities, inspections, and remediation measures pertaining to the structural integrity and operation and maintenance of coal ash basins. The report shall be submitted to the Department at the address in Part II.L.4(a)(4).
- (3) With regards to other issues which may have long term impacts on integrity, such as trees growing in or on the basin or basin dikes or vegetation blocking spillways, a plan to address these issues shall be submitted to the Department within 45 days of discovery (or 45 days of the effective date of the permit if the condition already exists). A discussion of the need for remedial action in these situations shall be included in the plan. The plan shall be submitted to the Department at the address in Part II.L.4(a)(4).
- (4) The permittee shall maintain records of all inspection and maintenance activities, including corrective actions made in response to inspections and all other activities undertaken to repair or maintain the basin. All records shall be kept on site and made available to State or Federal inspectors upon request.
- (5) All pertinent basin permits, design, construction, operation, and maintenance information, including but not limited to plans, geotechnical and structural integrity documentation, copies of permits, associated certifications by a qualified inspector, and other pertinent information, shall be kept on site and made available to State or Federal inspectors upon request.

d. Permit Re-opener: This permit may be reopened to incorporate additional or more stringent requirements pertaining to the operation and maintenance of coal ash basins.

7. Intake screen backwash may be discharged from this facility.
8. This permit no longer covers the discharge of storm water associated with industrial activity. The permittee shall obtain coverage for storm water associated with industrial activity after the issuance of this permit and prior to the effective date of this permit to remain covered for those discharges.
9. This permit may be reopened to address compliance with 316(b) requirements for cooling water intake structures upon resolution of the EPA regulations in 40 CFR Part 125 Subpart J.
10. The permittee shall provide for a net reduction of 60,000 tons of ash from Ash Pond 1 by July 1, 2012. A report shall be submitted to the Department by October 1, 2012 describing the measures used to meet the reduction, the net tons of ash reduced, and sampling data showing the resulting net reduction in mass of the following metals: total arsenic, total cadmium, total chromium and total lead.



**FACT SHEET  
AND  
PERMIT RATIONALE**



**SCE&G/Wateree Steam Station  
NPDES Permit No. SC0002038**

Permitting Engineer: Melinda Vickers

June 1, 2010

Facility Rating: ☒ Major ☐ Minor

☐ Issuance (New) ☐ Reissuance ☒ Modification ☐ Minor Modification

**EPA review of the draft permit is required if any box below is checked (Mark all that apply)**

- ☐ Permits with discharges which may adversely affect the waters of another State (Coordination with the other State is also required)
- ☒ Major permits
- ☒ Permits with any discharge subject to any of the primary industrial categories (see R.61-9.122, Appendix A)
- ☒ Permits with any discharge with an average flow exceeding 0.5 MGD
- ☐ Permits for federal facilities with a daily average discharge exceeding 0.05 MGD
- ☐ Priority permits
- ☒ Modification(s) to any permit listed above or a mod that changes a permit to put it into one of the above categories (where it previously was not)
- ☐ Modification to any permit where the schedule of compliance interim dates are extended more than once

**List of Attachments to this Rationale:**

Attachment 1	Water Quality Spreadsheets – Revised for Arsenic only (pre and post FGD)
Attachment 2	Seep Data
Attachment 3	Predicted Arsenic Concentration from Groundwater Flow to the Wateree River at 7Q10 Flow
Attachment 4	Background Calculations

**I. Outfall 03A (03B) Arsenic Modification**

This rationale represents an addendum to the rationale/fact sheet dated August 28, 2008. Per letter dated December 15, 2009, the permittee has requested modification of this permit to revise the arsenic limit based on revised water quality standards for arsenic that became effective after this permit was issued in August 2008.

This outfall is outside a state-approved source water protection area (SWPA) for a surface water drinking water intake, but has the potential to affect the intake. The potentially affected intake (Intake #S38102) is owned by Santee Cooper. The 7Q10 and AAF to be used for permitting MCL and water/organism criteria are given on the spreadsheet. Additional information on source water protection is provided in sections III.B and G of this rationale.

**Arsenic**

**1. Previous permit limits (from permit effective on October 1, 2009):**

Interim (until April 1, 2012 or upon issuance of Approval to Place into Operation either the FGD scrubber blowdown system or landfill runoff/leachate basin, whichever comes first):

Monthly average: MR mg/l

Daily maximum: MR mg/l

Sampling frequency: 1/month

Sample type: Grab

Final (limits effective upon issuance of Approval to Place into Operation for either the FGD scrubber blowdown system or landfill runoff/leachate basin or April 1, 2012, whichever comes first):

Monthly average: 0.027 mg/l

Daily maximum: 0.040 mg/l

Sampling frequency: 1/month

Sample type: Grab

2. NPDES Application (from application submitted in 2008): (No. of analyses: 1)  
Maximum Daily Value: pre-FGD= 12 µg/l (0.61 lb/d); FGD= 12 µg/l (0.69 lb/d)
3. DMR Data: Since the permit became effective in Oct 2009, 3 samples have been collected and reported. The results of these 3 samples and dates of collection are

Date	Arsenic (µg/l)
Oct 2009	49.1
Nov 2009	32.4
Dec 2009	39.3

4. Water Quality Data: The arsenic criteria in the water quality standards regulation, R.61-68 were changed during the last triennial review of the standards. The new criteria became effective for use in permitting in September 2008 when EPA approved the regulation. The human health water/organism and organism only criteria have been removed from regulation. To see all criterion values considered for this modification, see spreadsheets in Attachment 1.
5. Effluent limitations guidelines (ELGs) and professional judgment-based limits: none
6. Other Information: Arsenic is a suspected source in FGD scrubber blowdown and landfill leachate. Arsenic content is a product of the coal used.

Derivation of limits: Since the permit was issued in August 2008, more information regarding arsenic has become available. The area underneath the ash ponds at the Wateree Station has been granted a groundwater mixing zone through a Consent Agreement issued in Feb. 2001 by DHEC. Monitoring well samples and surface water (river) samples are collected in accordance with the mixing zone agreement to determine the levels of arsenic in the groundwater and in the Wateree River near the ponds.

There are also two (2) known seeps of groundwater (discovered in Fall 2009) that are seeping from the bank into the Wateree River near the ash ponds. These seeps may be known as the North Seep (or Seep A) and the South Seep (or Seep B). They are located north of outfall 03A (and 03B) and are near the monitoring well known as MW-11 (one seep just north and the other just south of the well). Sampling of the seeps has been performed in the fall of 2009 by SCE&G and DHEC (see data in Attachment 2).

With the assistance of the Water Monitoring, Assessment and Protection Division, all this information has been used to predict a worst-case instream arsenic concentration due to groundwater that potentially reaches the Wateree River. The following explains how these calculations were performed. A summary of the values and calculations performed is included in Attachment 4.

The flux of groundwater into the river is calculated using the following equation. Flux is simply a measure of the groundwater flow over a given area in a given time.

$$Q_{gw} = (T)(i)(L) \text{ where}$$

$Q_{gw}$  = groundwater flux (ft<sup>3</sup>/s) – this is the value being determined

T = transmissivity (ft<sup>2</sup>/s) - this value was taken from data reported by SCE&G in the groundwater mixing zone application in June 2000

i = hydraulic gradient (ft/ft) – this value was taken from the Seep B (south seep) profile from the ash basin to the river provided by SCE&G to DHEC in Oct 2009

L = length (ft) – this is the length of the river where arsenic is present in groundwater (taken from Semi-Annual 2008 Monitoring Report by GEL for SCE&G)

$$Q_{gw} = 0.6392 \text{ ft}^3/\text{s}$$

To predict the arsenic concentration in the river upstream of Outfall 03A, the flux ( $Q_{gw}$ ), river flow ( $Q_{7Q10}$ ) and arsenic concentration in the groundwater are multiplied. To generate a worst-case value for permitting consideration, the highest concentration of arsenic in groundwater that has been reported has been used. This value is 1900  $\mu\text{g/l}$  and was taken from the Sept 2009 seep data.

As in river from groundwater sources =  $(As_{gw})(Q_{gw})/Q_{7Q10} = 1.26 \mu\text{g/l}$

To determine the instream concentration to be used as background for evaluation of aquatic life criteria, a mass balance is performed. Upstream of the facility at DHEC monitoring station CW-206, arsenic was not sampled and therefore is assumed to be absent. This value will be considered zero in the mass balance. The concentration of arsenic in the river above Outfall 03A but below the seeps is equal to the concentration of arsenic from groundwater sources calculated above. Attachment 4 shows the equations used to generate this concentration and this concentration is entered into the water quality calculation (Data sheet) as background for the discharge (in the 90<sup>th</sup> percentile background column).

To determine the instream concentration to be used as background for evaluation of human health criteria, another mass balance is performed. Since the human health criterion for arsenic is based on the MCL and the MCL is only used in permitting when there is a drinking water intake that could be affected, the background calculation will use the flow of the river to protect the intake, not the flow at the discharge point. The concentration determined instream below the seeps but before the outfall will be used as the upstream concentration and will be divided by the flow to protect the intake (the average annual flow for source water protection). Attachment 4 shows the equations used to generate this concentration and the resulting concentration that is entered into the water quality calculation (Data sheet) as background for the discharge (in the median column).

Additionally, the Department has changed the source water protection program such that the value used to calculate dilution in this modification is different (higher) than that used in the previous permit. An explanation of the changes related to source water protection is included in sections III.B and G of this rationale.

7. Does the discharge cause, have the Reasonable Potential to Cause or Contribute:  
pre-FGD: No  
after FGD and/or landfill operation begins: No
8. PQL: 5.0  $\mu\text{g/l}$
9. Conclusion: Due to the change in the water quality standards for arsenic and considering the groundwater seeps north of the discharge point, there is not reasonable potential for the discharge to exceed water quality. However, since there is still some uncertainty about the levels of arsenic expected after the FGD systems begin operation, a monitor and report requirement will remain in the permit. The permit already includes a condition that a completed Form 2C be submitted after the FGD systems begin operation. The arsenic data collected may be submitted on the Form 2C and will be evaluated when the new 2C is submitted. The permit may be reopened based on review of the new data or a change to standards. A reopener clause has been added to Part V.  
Monthly average: MR mg/l  
Daily maximum: MR mg/l  
Sampling frequency: 1/month  
Sample type: Grab

The schedule of compliance in Part IV for arsenic has been removed.

#### CHANGES/ADDITIONS TO PART V CONDITIONS

##### Coal Ash Basins Operation and Maintenance (Part V.E.6)

Coal ash basins are used to treat or store wastewater and thus are included in the permit's operation and maintenance requirements. Regulation 61-9.122.41(e) requires the permittee to properly operate and maintain all facilities of treatment and control used to achieve compliance with their permits.

The permit includes new requirements to address coal ash basin operation and maintenance. The permit requires monthly inspections by trained personnel. Increased monitoring is required after large precipitation events, when there is an increased stress to impoundments and a greater potential for impacts on integrity. In addition, annual inspections by a qualified professional engineer are required. In response to any changes, such as cracks, erosion, bulges, and changes in seepage that may compromise the structural integrity, the permittee is also required to respond in a timely manner. The permit requires annual reporting of inspection and remedial activities as well as timely reporting of changes to integrity and associated corrective actions. These new requirements are intended to increase the permittee's focus on operation and maintenance to reduce future risks of basin compromise. Inspections which are required by some other agency may be used to meet the permit requirements as long as they meet all the requirements of this permit.

**Ash removal/source reduction (Part V.E.10)**

A permit condition has been added which requires SCE&G to remove a net amount of ash from the coal ash basin over the life of the NPDES permit to reduce levels of pollutants that may be leaching into the groundwater.

**II. GENERAL INFORMATION**

- A. The effluent from this facility may be subject to the requirements of any of the following regulations: R.61-68, R.61-69, R.61-9.122, 124, 125, 129, 133, and 403; 40 CFR Part 136; Subchapter N (40 CFR Parts 400 through 402 and 404 through 471); and R.61-9.503, 504 and 505.
- B. Authority: This permit is written in accordance with applicable laws and regulations including, but not limited to, Regulation 61-9, Regulation 61-68, Pollution Control Act and Clean Water Act.
- C. Under R.61-9.124.8 (Fact Sheet), a fact sheet shall be prepared for every draft permit for a major NPDES facility or activity, for every Class I sludge management facility, for every NPDES draft permit that incorporates a variance or requires an explanation under section 124.56(b), and for every draft permit which the Department finds is the subject of wide-spread public interest or raises major issues.
- D. The conclusions noted in the Rationale establish proposed effluent limitations and permit requirements addressed in R.61-9.122.43 (Establishing Permit Conditions), R.61-9.122.44 (Establishing Limitations, Standards and other permit conditions) and other appropriate sections of R.61-9.

**III. BACKGROUND AND PROCEDURES FOR PERMIT LIMIT DEVELOPMENT**

- A. The receiving waterbody 7Q10, annual average flow or other critical flow condition at the discharge point, and 7Q10, annual average flow, or other critical flow condition at the boundary of the source water protection area above a proposed or existing drinking water intake (if applicable) are determined by the SCDHEC's Wasteload Allocation Section. The 7Q10, Annual Average Flow or other critical flow conditions are based on information published or verified by the USGS, an estimate extrapolation from published or verified USGS data or from data provided by the permittee. These flows may be adjusted by the Wasteload Allocation Section to account for existing water withdrawals that impact the flow. The 7Q10 (or 30Q5 if provided by the applicant), annual average flow at the discharge point, or other critical flow condition or 7Q10 (or 30Q5 if provided by the applicant), annual average flow or other critical flow condition at the boundary of the SWP area for a proposed or existing drinking water intake will be used to determine dilution factors, as appropriate, in accordance with R.61-68.C.4.a & 4.b for aquatic life, human health, and organoleptic effects respectively.
- B. Water and organism consumption and drinking water MCL data will be evaluated as human health values when calculating dilution factors. "The Department may, after Notice of Intent included in a notice of a proposed NPDES permit in accordance with Regulation 61-9.124.10, determine that drinking water MCLs or W/O shall not apply to discharges to those waterbodies where there is: no potential to affect an existing or proposed drinking water source and no state-approved source water protection area." For permitting purposes, "a proposed drinking

water source is one for which a complete permit application, including plans and specifications for the intake, is on file with the Department at the time of consideration of an NPDES permit application for a discharge that will affect or has the potential to affect the drinking water source” (R.61-68.E.14.c(5)).

The Department will implement this protection in NPDES permits using the source water protection program already developed for the drinking water program. A source water protection program was developed originally in 1999 to define the source water protection areas for each drinking water intake. The program was designed to identify source water protection areas (SWPAs) to aid drinking water systems in identifying sources of potential contamination that could affect their intakes. In September 2009, this program was modified to redefine the SWPAs as smaller, more manageable areas. The revised document developed in September 2009 is entitled “South Carolina Drinking Water Source Assessment and Protection Program.” For the purposes of NPDES permitting, the SWPA referred to in Regulation 61-68.E.14.c(5) is the Primary Protection Area defined in the revised assessment and protection document. More information regarding the use of these protection areas is provided later in this rationale with the discussion of the procedure for establishing permit limits in Section G.2.

- C. Application of numeric criteria to protect human health: If separate numeric criteria are given for organism consumption, water and organism consumption (W/O), and drinking water Maximum Contaminant Levels (MCLs), they shall be applied as appropriate. The most stringent of the criteria shall be applied to protect the existing and classified uses of the waters of the State (R.61-68.E.14.b(1)).
- D. Numeric criteria have been established in R.61-68 based on organoleptic data (prevention of undesirable taste and odor). For those substances which have aquatic life and/or human health numeric criteria and organoleptic numeric criteria, the most stringent of the three shall be used for derivation of permit effluent limitations. See R.61-68.E.13.
- E. Sampling Frequency: Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit (R.61-9.122.41(j)(4)). Typically, requirements to report monitoring results shall be established on a case-by-case basis with a frequency dependent on the nature and effect of the discharge but in no case less than once a year (R.61-9.122.44(i)(2)).
- F. Compliance Schedules:
  - 1. A person issued an NPDES permit by the Department who is not in compliance with applicable effluent standards and limitations or other requirements contained therein at the time the permit is issued, shall be required to achieve compliance within a period of time as set forth by the Department, with effluent standards and limitations, with water quality standards, or with specific requirements or conditions set by the Department. The Department shall require compliance with terms and conditions of the permit in the shortest reasonable period of time as determined thereby or within a time schedule for compliance which shall be specified in the issued permit. (R.61-9.122.47(c)(1))
  - 2. If a time schedule for compliance specified in an NPDES permit which is established by the Department, exceeds nine (9) months, the time schedule shall provide for interim dates of achievement for compliance with certain applicable terms and conditions of the permit. (R.61-9.122.47(c)(2))
- G. Procedure for establishing effluent limitations:
  - 1. Effluent limits (mass and concentration) for Five day Biochemical Oxygen Demand (BOD<sub>5</sub>), Ultimate Oxygen Demand (UOD), Dissolved Oxygen (DO), Total Ammonia Nitrogen (as N), and Nutrients (e.g., nitrogen and phosphorus) are established by the Wasteload Allocation (WLA) Section, with consideration given to technology-based limitations.

- a. Five day Biochemical Oxygen Demand BOD<sub>5</sub>, Ultimate Oxygen Demand (UOD), Dissolved Oxygen (DO):

Effluent limits for conventional oxygen demanding constituents (BOD<sub>5</sub>, UOD and DO) are established to protect in-stream water quality, while utilizing a portion of the assimilative capacity of the receiving water. The ability of a water body to assimilate oxygen-demanding substances is a function of its physical and chemical characteristics above and below the discharge point. Various mathematical techniques, called models, have been developed to estimate this capacity. The Department follows the procedures as outlined in the "State/EPA Region IV Agreement on the Development of Wasteload Allocations/Total Maximum Daily Loads and NPDES Permit Limitations" dated October 30, 1991 (as updated) for determining the assimilative capacity of a given water body. Mathematical models such as QUAL2E and QUAL2E-UNCAS are used in accordance with "Enhanced Stream Water Quality Models QUAL2E and QUAL2E-UNCAS: Documentation and Users Manual" (EPA/600/3-87/007; dated May 1987) as updated. BOD<sub>5</sub> and UOD values determined from modeling results will be used in permitting as monthly average derived limits ( $C_{wld}$ ). Daily maximum derived limits will typically be determined by multiplying the monthly average value by two.

For facilities subject to effluent guidelines limitations or other technology-based limitations, BOD<sub>5</sub> will also be evaluated in accordance with the applicable industrial categorical guidelines. These guidelines will be identified in Part I of this rationale when they are applicable to the permit.

- b. Total Ammonia Nitrogen (as N):

Ammonia limitations based on oxygen demand will be determined from modeling information as described above. These values will be used as monthly average derived limits and a daily maximum will typically be determined by multiplying the monthly average derived limit by two. These values will be compared with the ammonia water quality criteria for protection of aquatic life from Regulation 61-68, Attachment 3 and any categorical limitations. The more stringent of the limitations will be imposed. Calculations for aquatic life criteria and other wasteload recommendations are shown in Part I of this rationale when ammonia is a pollutant of concern.

- c. Discharges of Nutrients:

In order to protect and maintain lakes and other waters of the State, consideration is given to the control of nutrients reaching the waters of the State. Therefore, in accordance with regulation R.61-68.E.11, the Department controls the nutrients as prescribed below. Nutrient limitations will be determined from the best available information and/or modeling performed by the Wasteload Allocation Section to meet these water quality standards.

- i. Discharges of nutrients from all sources, including point and nonpoint, to waters of the State shall be prohibited or limited if the discharge would result in or if the waters experience growths of microscopic or macroscopic vegetation such that the water quality standards would be violated or the existing or classified uses of the waters would be impaired. Loading of nutrients shall be addressed on an individual basis as necessary to ensure compliance with the narrative and numeric criteria.
- ii. Numeric nutrient criteria for lakes are based on an ecoregional approach which takes into account the geographic location of the lakes within the State and are listed below. These numeric criteria are applicable to lakes of 40 acres or more. Lakes of less than 40 acres will continue to be protected by the narrative criteria.

1. For the Blue Ridge Mountains ecoregion of the State, total phosphorus shall not exceed 0.02 mg/l,

chlorophyll *a* shall not exceed 10 ug/l, and total nitrogen shall not exceed 0.35 mg/l

2. For the Piedmont and Southeastern Plains ecoregions of the State, total phosphorus shall not exceed 0.06 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l
  3. For the Middle Atlantic Coastal Plains ecoregion of the State, total phosphorus shall not exceed 0.09 mg/l, chlorophyll *a* shall not exceed 40 ug/l, and total nitrogen shall not exceed 1.50 mg/l.
  - iii. In evaluating the effects of nutrients upon the quality of lakes and other waters of the State, the Department may consider, but not be limited to, such factors as the hydrology and morphometry of the waterbody, the existing and projected trophic state, characteristics of the loadings, and other control mechanisms in order to protect the existing and classified uses of the waters.
  - iv. The Department shall take appropriate action, to include, but not limited to: establishing numeric effluent limitations in permits, establishing Total Maximum Daily Loads, establishing waste load allocations, and establishing load allocations for nutrients to ensure that the lakes attain and maintain the narrative and numeric criteria and other applicable water quality standards.
  - v. The criteria specific to lakes shall be applicable to all portions of the lake. For this purpose, the Department shall define the applicable area to be that area covered when measured at full pool elevation.
2. Effluent concentration limits ( $C_{efflum}$ ) for parameters other than the parameters listed in G.1.a-c (except ammonia toxicity calculations) above are established using the following procedures:

$Q_{7Q10}$	7Q10 or other critical flow condition of the receiving water at the discharge point in mgd. (may require adjustment for withdrawals)
$AAF_d$	Average Annual Flow (AAF) or other critical flow condition of the receiving water at the discharge point in mgd. (may require adjustment for withdrawals)
$Q_{7Q10i}$	7Q10 or other critical flow condition of the receiving water at the SWP Area boundary in mgd.
$AAF_i$	Average Annual Flow (AAF) of the receiving water at the SWP Area boundary in mgd.
$Q_d$	Long term average discharge flow in mgd.

a. Determine dilution factors:

The following information is to be used (where applicable) for establishing effluent concentration limits:

- $DF_1$ : Dilution factor based on 7Q10 or other critical flow condition of the receiving water at the discharge point ( $Q_{7Q10}$ ). This dilution factor is used to determine the derived limits for protection of the following aquatic life and human health concerns for the reasons indicated:
- i. Aquatic Life (see R.61-68.C.4.a(1)). Protection of aquatic life on a short-term basis is needed at the point where aquatic organisms become exposed to the discharge.
  - ii. Human Health – Organism Consumption for parameters identified as non-carcinogens per R.61-68.C.4.b(1). Protection for human health on a short-term basis for consumption of aquatic organisms is needed at the point the aquatic organisms become exposed to the discharge.

$$DF_1 = \left( \frac{Q_{7Q10} + Q_d}{Q_d} \right)$$

$DF_2$ : Dilution factor, at the discharge point, based on the Average Annual Flow of the receiving water at the discharge point ( $AAF_d$ ). This dilution factor is used to determine the derived limits for protection of the following human health and organoleptic concerns for the reasons indicated:

- i. Human Health – Organism Consumption for parameters identified as carcinogens per R.61-68.C.4.b(1). Protection for human health on a long-term basis to prevent cancer due to consumption of aquatic organisms is needed at the point the aquatic organisms become exposed to the discharge.
- ii. Organoleptic effects per R.61-68.C.4.b(1). Protection for taste and odor issues related to the discharge is needed at the point where the discharge enters the receiving water.

$$DF_2 = \left( \frac{AAF_d + Q_d}{Q_d} \right)$$

$DF_3$ : This dilution factor is based on the 7Q10 or other critical flow condition ( $Q_{7Q10}$ ) for protection of a proposed or existing drinking water intake that the discharge has the potential to affect. This dilution factor is used to determine the derived limits for protection of the following human health concerns for the reasons indicated:

- i. Human Health – Water and Organism (W/O) Consumption for parameters identified as non-carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for short-term health effects when the discharge has the potential to affect a drinking water intake. Protection of human health relative to drinking the water from the waterbody and consuming aquatic organisms from the same waterbody is provided by this criterion, but drinking the water withdrawn from the waterbody may require a higher level of protection in terms of applicable dilution than consumption of organisms.
- ii. Human Health - Drinking Water Maximum Contaminant Level (MCL) for parameters identified as non-carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for short-term health effects when the discharge has the potential to affect a drinking water intake. Protection of human health relative to drinking the water from the waterbody after conventional treatment per R.61-68.G is provided by this criterion.

$$DF_3 = \left( \frac{Q_{7Q10} + Q_d}{Q_d} \right)$$

$DF_4$ : Dilution factor based on the Average Annual Flow or other critical flow condition ( $Q_{7Q10}$ ) for protection of a proposed or existing drinking water intake that the discharge has the potential to affect. This dilution factor is used to determine the derived limits for protection of the following human health concerns for the reasons indicated:

- i. Human Health–Water and Organism Consumption for parameters identified as carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for long-term health effects due to cancer when the discharge has the potential to affect a drinking water intake. Protection of human health



relative to drinking the water from the waterbody and consuming aquatic organisms from the same waterbody is provided by this criterion, but drinking the water withdrawn from the waterbody may require a higher level of protection in terms of applicable dilution than consumption of organisms.

- ii. Human Health - Drinking Water Maximum Contaminant Level (MCL) for parameters identified as carcinogens per R.61-68.C.4.b(1) and E.14.c(5) to protect for long-term health effects due to cancer when the discharge has the potential to affect a drinking water intake. Protection of human health relative to drinking the water from the waterbody after conventional treatment per R.61-68.G is provided by this criterion.

$$DF_4 = \left( \frac{AAF_i + Q_d}{Q_d} \right)$$

For both  $DF_3$  and  $DF_4$ , to satisfy the requirements of R.61-68.C.10(a) for both W/O and MCL criteria, the Department will use the following to determine dilution:

1. Where the discharge in a flowing stream has the potential to affect an intake and
  - a. The discharge is within the SWPA (15 river miles) of the intake, the dilution at the 15-river mile boundary of the tributary with the largest applicable critical flow will be used, or
  - b. The discharge is outside the SWPA (15 river miles) of the intake, the dilution using the applicable critical flow at the intake will be used.
2. Where the discharge in a lake has the potential to affect an intake in a lake that is not a run-of-river impoundment\*, the dilution is determined using the sum of the applicable critical flows of all tributaries entering the lake. The following exceptions and clarifications apply to lake discharges and intakes in lakes on a case-by-case basis:
  - a. Where the discharge has the potential to affect an intake in a lake that acts as a run-of-river impoundment, the dilution will be determined as if that intake is in a flowing stream (see Item #1 above),
  - b. Where the discharge is in the arm of a lake and the intake is in the upper reach of another arm of the lake, no protection of W/O or MCL criteria is needed because the discharge does not have the potential to affect the intake, or
  - c. Where the discharge and intake are in the same arm of a lake and the lake acts as a run-of-river impoundment, the dilution is determined as if that intake is in a flowing stream (see Item #1 above), or
3. If the discharge has the potential to affect multiple intakes, the SWPA of the intake closest to the discharge will be protected. However, the permittee may be required to provide notification to all affected intakes.

\*Run-of-river impoundment is defined as a lake or reservoir (or arm of a lake or reservoir) that is narrow and/or shallow offering little dilution or flow.

- b. Determine derived limits using the following procedures:

$WQS_{al}$	Freshwater Standard (based on an established criteria or other published data per R.61-68) for protection of Aquatic Life; may be a CCC or CMC as defined below
$WQS_{org}$	Standard (based on an established criteria or other published data per R.61-68) for protection of Human Health – Organism Consumption
$WQS_{wo}$	Standard (based on an established criteria or other published data per R.61-68) for protection of Human Health – Water & Organism Consumption.
$WQS_{mcl}$	Standard (based on an established criteria or other published data per R.61-68) for Drinking Water MCL (Maximum Contaminant Level).
$WQS_{ol}$	Standard (based on an established criteria or other published data per R.61-68) based on Organoleptic Data.
$C_{aqlife}$	Concentration limit derived from aquatic life data
$C_{HH}$	Concentration limit derived from human health data as determined from organism ( $C_{org}$ ), water/organism ( $C_{wo}$ ) and MCL ( $C_{mcl}$ ) data
$C_{ol}$	Concentration limit derived from organoleptic data
$C_b$	The background concentration of the concerned parameter in mg/l is typically determined from ambient monitoring data or data provided by applicant. If the waterbody to which the discharge flows is not on the 303(d) list, the 90 <sup>th</sup> percentile of ambient monitoring data for aquatic life protection for the parameters identified in the Appendix (Water Quality Numeric Criteria) to Regulation 61-68 from the last 3 years, or whatever is available if less than 3 years, will typically be used. If the waterbody to which the discharge flows is not on the 303(d) list, the median value of ambient monitoring data for human health protection for the parameters identified in the Appendix (Water Quality Numeric Criteria) to Regulation 61-68 from the last 3 years, or whatever is available if less than 3 years, will typically be used. The background concentration is assumed to be zero (0) in the absence of actual data based on Departmental guidance and EPA recommendation.

i. Determine the derived limits for protection of Aquatic Life ( $C_{aqlife}$ )

1. The following guidelines apply to determining aquatic life limits using this basic equation:

$$C_{aqlife} = (DF_1 \times WQS_{al}) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

- a. Typically, the Criterion Maximum Concentration (CMC) is applied as a daily maximum derived limit and the Criterion Continuous Concentration (CCC) is applied as a monthly average derived limit, after consideration of dilution and background concentrations. The CMC and CCC for specific metals will be adjusted using the procedures in 60 FR 22229, “Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants; States’ Compliance-Revision of Metals Criteria,” May 4, 1995 and the “Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria,” Oct. 1, 1993 and applied as a daily maximum and monthly average, respectively, after consideration of dilution and background concentrations. For specific metals, this calculation is explained in detail later in this rationale.

monthly average =  $C_{aqlife}$  using CCC as  $WQS_{al}$

daily maximum =  $C_{aqlife}$  using CMC as  $WQS_{al}$

- b. If only a CMC exists for a particular parameter, the daily maximum derived permit limit will be set using that value, after consideration of dilution and background concentrations. If no

other values (e.g., human health) exist for that parameter on which to base a monthly average limit and the discharge is continuous, the monthly average will be set equal to the daily maximum to satisfy Regulation 61-9.122.45(d). In no case shall the monthly average limit be set higher than the daily maximum limit. If only a CCC is given, it will be used as a monthly average derived limit and the daily maximum derived limit will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the US EPA's "Technical Support Document for Water Quality-based Toxics Control", EPA/505/2-90-001, March 1991 (hereafter known as the TSD).

If a CCC exists and no CMC exists and no other acute or chronic data exists, the aquatic life limits are

$$\begin{aligned}\text{monthly average} &= C_{aq\text{life}} \text{ using CCC as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{aq\text{life}}\end{aligned}$$

If a CMC and no CCC exists, and no other acute or chronic data exists, the aquatic life limits are

$$\begin{aligned}\text{monthly average} &= C_{aq\text{life}} \text{ using CMC as } WQS_{al} \\ \text{daily maximum} &= C_{aq\text{life}} \text{ using CMC as } WQS_{al}\end{aligned}$$

- c. If only an acute toxicity effect concentration for a number of species for a particular pollutant is given as a  $LC_{50}$ , the lowest concentration should be divided by an acute-to-chronic ratio (ACR) of 10 and a sensitivity factor of 3.3, for an acceptable instream concentration in order to protect against chronic toxicity effects (R.61-68.E.16.a(1)). Other acute toxicity data will be handled similarly. The value obtained from this calculation will be used as a monthly average derived limit after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

$$\begin{aligned}\text{monthly average} &= C_{aq\text{life}} \text{ using other data as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{aq\text{life}}\end{aligned}$$

- d. If a chronic toxicity effect concentration for a number of species for a particular pollutant is given as a no observed effect concentration (NOEC), the lowest concentration should be divided by a sensitivity factor of 3.3 in order to protect against chronic toxicity to the most sensitive species (R.61-68.E.16.a(2)). Other chronic toxicity data will be handled similarly. The value obtained from this calculation will be used as a monthly average derived limit after consideration of dilution and background concentrations. The daily maximum will be two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

$$\begin{aligned}\text{monthly average} &= C_{aq\text{life}} \text{ using other data as } WQS_{al} \\ \text{daily maximum} &= 2 \times C_{aq\text{life}}\end{aligned}$$

- e. If both acute and chronic data are available for a particular pollutant, monthly average derived limit will be calculated as in c and d above for each acute and chronic, respectively. The more stringent of the monthly average derived limits will be the monthly average derived limit used after consideration of dilution and background concentrations. The daily maximum will be

two (2) times the value obtained for the monthly average based on a simplified statistical procedure for determining permit limits recommended in Section 5.4.2 of the TSD.

monthly average =  $C_{aqlife}$  using other data as  $WQS_{dl}$   
daily maximum =  $2 \times C_{aqlife}$

- f. Consider the background concentration ( $C_b$ ) of the parameter of concern. If the background concentration is equal to or greater than the applicable standard ( $WQS$ , as defined above) for the parameter of concern, then the derived concentration limit ( $C_{aqlife}$ ) for that parameter is established equal to the standard ( $WQS$ ) so that no additional amount of that pollutant is added to the waterbody. An exception exists where the naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation. In those situations, the Department may establish permit effluent limitations ( $C_{efflim}$ ) at a level higher than the derived limit, but no higher than the natural background concentration (i.e. a "rise above background" limit). In such cases, the Department may require biological instream monitoring and/or whole effluent toxicity (WET) testing (R.61-68.E.14.c(2)).

If  $C_b$  is not based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{aqlife} = WQS.$$

If  $C_b$  is based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{aqlife} < C_{eff\ lim} \leq C_b.$$

2. Metals: Regulation 61-9.122.45(c) requires that permit limits be expressed in terms of total recoverable metal (with limited exceptions). In order to translate from the water quality criterion to a total recoverable metal, Regulation R.61-68.E.14.c(4) provides for the use of the EPA Office of Water Policy and "Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria", October 1, 1993. A subsequent revision published in the Federal Register (60 FR 22229) on May 4, 1995 updated the data in the original report. See R.61-68 Appendix for CMC and CCC values and equations, Attachment 1 for "Conversion Factors for Dissolved Metals" and Attachment 2 "Parameters for Calculating Freshwater Dissolved Metals Criteria that are Hardness-Dependent".

Per R.61-68.E.14.a(3), the CMC and CCC are based on a hardness of 25 mg/l if the ambient or mixed stream hardness is equal to or less than 25 mg/l. Concentrations of hardness less than 400 mg/l may be based on the mixed stream hardness if it is greater than 25 mg/l and less than 400 mg/l and 400 mg/l if the ambient stream hardness is greater than 400 mg/l. The ambient stream hardness is assumed to be 25 mg/l in the absence of actual stream data. Mixed stream hardness may be determined using flow-weighted effluent hardness and stream hardness.

The following equations and constants will be used to calculate aquatic life metals limits based on these documents. The values of the terms referenced in this section and determined from the equations below are included in the Metals spreadsheet attached to this rationale. The following metals are subject to this section:

arsenic

lead

cadmium	mercury
chromium (III & VI)	nickel
copper	zinc

The equation for  $C_d$  below changes the total metal to dissolved metal. From Technical Guidance Manual for Performing Waste Load Allocations Book II, Rivers and Streams, EPA/440/484/022.

$$S = CCC \text{ or } CMC \text{ (adjusted for hardness)}$$

$$C_d = S \times CF$$

where  $C_d$  = Dissolved metal concentration (µg/l)

$S$  = a constant to represent the CCC or CMC (µg/l)

$CF$  = Conversion factor considered most relevant in fresh water for aquatic life as defined by EPA for each metal

Once the dissolved metal concentration is known, determine  $C_p$  using the equation for  $C_d$  above and the following equations.

$$C_p = C_d \times \left\{ 1 + \left( K_{pb} \times TSS_b \times 10^{-6} \right) \right\}$$

$$K_{pb} = K_{po} \times (TSS_b)^a$$

where  $C_p$  = Particulate sorbed metal concentration (µg/l). This value represents the revised water quality criterion for the metal to be used for ambient data comparison.

$K_{pb}$  = Linear partition coefficient using the stream TSS (liters/mg)

$K_{po}$  = Metal-specific equilibrium constant (liters/mg)

$a$  = Metal-specific constant

$TSS_b$  = Background or in-stream Total Suspended Solids (TSS) concentration (mg/l). The background TSS is assumed to be 1 mg/l in the absence of actual instream data based on the 5th percentile of ambient TSS data on South Carolina waterbodies from 1993-2000.

To determine the effluent limit ( $C_{aqlife}$ ), use the following equations to translate the limits into a total recoverable metal concentration.

$$TSS_{avg} = \frac{(Q_d \times TSS_e) + (Q_{7Q10} \times TSS_b)}{Q_d + Q_{7Q10}}$$

where  $TSS_e$  = Effluent Total Suspended Solids (TSS) concentration (mg/l) determined from actual long-term average data or proposed permit limits if no data available.

$TSS_{avg}$  = Average in-stream (mixed) TSS concentration (mg/l)

$$C_i = C_d \times \left\{ 1 + \left( K_p \times TSS_{avg} \times 10^{-6} \right) \right\}$$

$$K_p = K_{po} \times (TSS_{avg})^a$$

where  $C_t$  = Total metal concentration ( $\mu\text{g/l}$ )

$K_p$  = Linear partition coefficient (liters/mg). This is the distribution of metal at equilibrium between the particulate and dissolved forms.

Once  $C_t$  has been calculated, it is multiplied by  $DF_1$  and background concentrations are accounted for to obtain the derived limit (max or avg) ( $C_{aqlife}$ ):

$$C_{aqlife} = (C_t \times DF_1) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

monthly average =  $C_{aqlife}$  based on CCC

daily maximum =  $C_{aqlife}$  based on CMC

3. Where a Water Effects Ratio (WER) is used to adjust a criterion, derived limits for the adjusted aquatic life criterion ( $C_{aqlife-adj}$ ) are calculated as follows. The WER is a type of site-specific permit effluent limit (as allowed by R.61-68.E.14.c(7)) derived using a ratio determined from EPA methodology. Both DHEC and EPA must approve the WER prior to implementation. See EPA's 1994 "Interim Guidance on the Determination and Use of Water-Effect Ratios (WERs) for Metals." The approved WER will be shown in the water quality spreadsheets on the Data sheet. The revised aquatic life value will be shown with the WER, hardness and dissolved metals adjustments, as appropriate, in the aquatic life columns on the Pollutant spreadsheet.

- a. For metals identified in #2 above, revise the equation for S as follows:

$$S = [\text{CCC or CMC (adjusted for hardness)}] \times \text{WER}$$

Follow the remaining calculations in #2 above to get an adjusted  $C_{aqlife}$  value that will be used to determine derived limits:

monthly average =  $C_{aqlife-adj}$  based on CCC

daily maximum =  $C_{aqlife-adj}$  based on CMC

- b. For other parameters, use the appropriate equation in #1 above to derive an adjusted  $C_{aqlife}$  value. The monthly average will be calculated as follows using the appropriate  $WQS_{al}$  and the daily maximum calculated using the appropriate equations in #1 above.

$$C_{aqlife-adj} = (DF_1 \times WQS_{al} \times \text{WER}) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

4. Where the Recalculation Procedure is used to adjust a criterion, derived limits for the adjusted aquatic life criterion ( $C_{aqlife-adj}$ ) are calculated as follows. The Recalculation Procedure is intended to cause a site-specific criterion to appropriately differ from the State-adopted national aquatic life criterion if justified by demonstrated pertinent toxicological differences between the aquatic species that occur at the site and those that were used in the derivation of the criterion. It is important to note that the site (the portion of the waterbody or watershed being affected) must be clearly defined. This procedure is used to develop site-specific criteria in accordance with R.61-68.C.12. Both DHEC and EPA must approve the recalculated criterion prior to implementation. The recalculated criterion will require an update to the Water Classifications and Standards Regulations, R.61-68 and 61-69.

The approved recalculated aquatic life criteria (*SS-CCC* and *SS-CMC*, as appropriate) will be shown adjusted for hardness on the Data spreadsheet. The additional dissolved metals adjustments, as appropriate, will be shown in the aquatic life columns on the Pollutant spreadsheet. If the parameter being adjusted is one of the metals in #2 above, SS will include all the appropriate metals adjustments.

$$C_{aqlife-adj} = (DF_1 \times SS - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\})$$

monthly average =  $C_{aqlife-adj}$  based on CCC

daily maximum =  $C_{aqlife-adj}$  based on CMC

5. Where a WER and recalculation procedure are combined to adjust a criterion, derived limits ( $C_{aqlife-adj}$ ) for aquatic life protection are calculated by combining the calculations in #3 and #4.

$$C_{aqlife-adj} = (DF_1 \times SS \times WER) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

monthly average =  $C_{aqlife-adj}$  based on CCC

daily maximum =  $C_{aqlife-adj}$  based on CMC

6. Other scientifically defensible methods for developing site-specific aquatic life effluent limits or site-specific criterion may be used on a case-by-case basis.

ii. Determine derived limits for protection of Human Health

1. The following guidelines apply to determining human health limits:

- a. The human health criterion given by Regulation 61-68 will be applied as a monthly average derived limit after consideration of dilution and background concentrations ( $C_{HH-avg}$ ). Exceptions exist based on EPA criteria and are indicated for specific parameters. No limits on human health based on water and organism consumption or drinking water MCLs will be imposed if there is no potential to affect an existing or proposed drinking water intake and no state-approved source water protection area (i.e., if there is no intake downstream of the discharge) in accordance with Regulation 61-68.E.14.c(5).
- b. The daily maximum permit limit will be determined from the monthly average value from (a) above and a multiplier ( $M$ ) determined using a statistical procedure recommended in Section 5.5 using average = 95<sup>th</sup> percentile from Table 5-3 in the TSD. The permitted or proposed number of samples per month ( $n$ ) is used with the coefficient of variation ( $CV$ ) to determine  $M$ .

$$M = \frac{e^{(Z_m \sigma - 0.5 \sigma^2)}}{e^{(Z_a \sigma_n - 0.5 \sigma_n^2)}}$$

where:

$$\sigma_n^2 = \ln \left( \frac{CV^2}{n} + 1 \right)$$

$$\sigma^2 = \ln(CV^2 + 1)$$

$CV$  = coefficient of variation of the effluent concentration. For a data set where  $n > 10$ , the  $CV$  is calculated as standard deviation divided by mean for the data set being evaluated. For data set where  $n < 10$ , the  $CV$  is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the  $CV$  is too large to calculate a standard deviation or mean with sufficient confidence.

$n$  = the number of effluent samples per month (where frequency is less than 1/month,  $n = 1$ )

$z_m$  = the percentile exceedance probability for the daily maximum permit limit (=2.326 for 99<sup>th</sup> percentile basis)

$z_a$  = the percentile exceedance probability for the monthly average permit limit (=1.645 for 95<sup>th</sup> percentile basis)

$$C_{HH-max} = M * C_{HH-avg}$$

- c. Consider the background concentration ( $C_b$ ) of the parameter of concern. If the background concentration is equal to or greater than the applicable standard ( $WQS$ , as defined above) for the parameter of concern, then the derived concentration limit ( $C_{HHc}$ ) for that parameter and for the protection of that standard is established equal to the standard ( $WQS$ ). An exception exists where the naturally occurring instream concentration for a substance is higher than the derived permit effluent limitation. In those situations, the Department may establish permit effluent limitations ( $C_{efflim}$ ) at a level higher than the derived limit, but no higher than the natural background concentration (i.e. a “rise above background” limit). In such cases, the Department may require biological instream monitoring and/or whole effluent toxicity (WET) testing (See R.61-68.E.14.c(3)).

If  $C_b$  is not based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{HH} = WQS.$$

If  $C_b$  is based on naturally occurring concentrations and

$$C_b \geq WQS$$

Then, generally,

$$C_{HH} < C_{eff\ lim} \leq C_b.$$

## 2. Human Health – Organism Consumption ( $C_{org}$ ).

### a. For Carcinogens

The Monthly Average is calculated as follows:

$$C_{org} = (DF_2 \times WQS_{org}) - \left\{ C_b \times \left( \frac{AAF_d}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{org-max} = M * C_{org}$$

### b. For Non-carcinogens

The Monthly Average is calculated as follows:



$$C_{org} = (DF_1 \times WQS_{org}) - \left\{ C_b \times \left( \frac{Q_{7Q10}}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{org-max} = M * C_{org}$$

3. Human Health – Water and Organism Consumption ( $C_{wo}$ )

a. For Carcinogens

The Monthly Average is calculated as follows:

$$C_{wo} = (DF_4 \times WQS_{wo}) - \left\{ C_b \times \left( \frac{AAF_i}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{wo-max} = M * C_{wo}$$

b. For Non-carcinogens

The Monthly Average is calculated as follows:

$$C_{wo} = (DF_3 \times WQS_{wo}) - \left\{ C_b \times \left( \frac{Q_{7Q10i}}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{wo-max} = M * C_{wo}$$

4. Human Health – Drinking Water Maximum Contaminant Level (MCL) ( $C_{mcl}$ ).

a. For Carcinogens

The Monthly Average is calculated as follows:

$$C_{mcl} = (DF_4 \times WQS_{mcl}) - \left\{ C_b \times \left( \frac{AAF_i}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{mcl-max} = M * C_{mcl}$$

b. For Non-carcinogens

The Monthly Average is calculated as follows:

$$C_{mcl} = (DF_3 \times WQS_{mcl}) - \left\{ C_b \times \left( \frac{Q_{7Q10i}}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{mcl-max} = M * C_{mcl}$$

5. Organoleptic criteria ( $C_{ol}$ ).

The Monthly Average is calculated as follows:

$$C_{ol} = (DF_2 \times WQS_{ol}) - \left\{ C_b \times \left( \frac{AAF_d}{Q_d} \right) \right\}$$

The Daily Maximum is calculated as

$$C_{ol-max} = M * C_{ol}$$

- iii. Parameters given in a wasteload allocation for oxygen-demanding pollutants and nutrients will be limited as

$$\text{monthly average} = C_{wla}$$

$$\text{daily maximum} = 2 \times C_{wla}$$

- c. Determine the most stringent of applicable water quality data using the derived limits determined above:

$$\text{monthly average } C_{efflim} = \text{minimum of derived monthly averages } (C_{aqlife}, C_{org}, C_{wo}, C_{mcl}, C_{ol}, C_{wla})$$

$$\text{daily maximum } C_{efflim} = \text{minimum of derived daily maximums } (C_{aqlife}, C_{org-max}, C_{wo-max}, C_{mcl-max}, C_{ol-max}, C_{wla-max})$$

- d. Determine whether the discharge causes, has the reasonable potential to cause or contributes to a water quality violation.

Regulation 61-9.122.44(d)(1)(i) states: "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Department determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."

When determining whether a discharge causes, has the reasonable potential to cause or contributes to an instream excursion, the Department will use procedures which account for controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and, where appropriate, the dilution of the effluent in the receiving water (R.61-9.122.44(d)(1)(ii)).

Based on the above statements, there are three scenarios when limitations are required, as follows:

- i. When data provided by the permit applicant indicates discharge values greater than the proposed limitation derived above, that discharge may cause an excursion above a narrative or numeric water quality criterion.
- ii. A discharge may be determined to contribute to an excursion of a water quality criterion when the waterbody is impaired (e.g., on the 303(d) list) for the parameter of concern and that parameter is also being discharged at levels above the water quality criterion.
- iii. Reasonable potential to cause a water quality violation is determined using the following information:

The Department will primarily use EPA's Technical Support Document (TSD) for determining reasonable potential using effluent data. Other methods may be used as well to evaluate data sets. All pollutants given in a wasteload allocation or an effluent limitation guideline will be limited in the permit.

When effluent data consists of non-quantifiable/non-detectable values or when no effluent data is available, other factors and information are considered to determine reasonable potential. In situations where a pollutant is known to be present in the wastestream (due to production data or other information), we know it is being discharged and has the potential to impact even though it may not be quantifiable. The fact that it is present will be enough information to say reasonable potential exists for that pollutant. Therefore, a reasonable potential decision is based on various data and information, and not just non-quantifiable/non-detectable data. Consideration is given to existing data, dilution in the waterbody, type of receiving water, designated use, type of industry/wastestream, ambient data, history of compliance, and history of toxic impact. If any source of information indicates reasonable potential to cause or contribute to an exceedance of the water quality standard, a water quality limit will be established.

Note: The result of the following calculations may indicate that reasonable potential does not exist. However, as stated above, other information may "override" this numerical determination to justify the need for a limit.

1. The procedure for determining reasonable potential from actual effluent data is explained in Box 3-2 on page 53 of the TSD. Multiplying factors are determined from Table 3-2 at a 95% confidence level and 95% probability in Section 3.3.2. The following describes the procedures used for determining reasonable potential for chemical-specific parameters and WET, under certain circumstances. More information on determining reasonable potential for WET is given in Item 2 below.

Step 1: Data Analysis: The statistical calculations involved in the "Reasonable Potential" analysis require discrete numerical data. The following describes how the effluent data will be used in determining reasonable potential.

Actual analytical results should be used whenever possible. Results less than detection and quantification should be used as follows:

- a. If the permittee reports results below the practical quantitation limit (PQL) (as defined by the permit), then the reported "less than PQL" value for a given sample is generally assumed to be zero.
- b. If the permittee uses a detection/quantification level that is **greater** than the PQL, then the reported "less than" value for a given sample is generally assumed to be a discrete value equal to the detection/quantification level used by the permittee.
- c. If the reported data consists of both discrete and non-discrete values and/or the data is reported using varying detection/quantification levels, then, generally, a combination of the above two approaches is used, or the data is evaluated in a manner that is most appropriate for that data set.

Note: For information on the acceptable analytical methods and PQLs please refer to NPDES permit application attachment titled "Practical Quantitation Limits (PQL) and

Approved Test Methods.”

Step 2: Using data from the permit application, other data supplied by the applicant and/or Discharge Monitoring Report (DMR) data, determine the total number of observations ( $n$ ) for a particular set of effluent data and determine the highest value ( $C_{max}$ ) from that data set. For the monthly average comparison, the data set will include monthly average results and  $n$  will be the number of months in which they sampled in the time period being evaluated. For the daily maximum comparison, the data set will include daily maximum results and  $n$  will be the total number of samples in the time period being evaluated. Individual results may not necessarily be used in the calculation.

Step 3: Determine the coefficient of variation ( $CV$ ) for the data set. For a data set where  $n > 10$ , the  $CV$  is calculated as standard deviation divided by mean for the data set being evaluated. For data set where  $n < 10$ , the  $CV$  is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the  $CV$  is too large to calculate a standard deviation or mean with sufficient confidence.

$$CV = 0.6 \quad \text{for } n < 10$$

$$CV = \frac{\sigma}{\mu} \quad \text{for } n > 10$$

where:  $\sigma$  = Standard Deviation of the samples  
 $\mu$  = Mean of the samples

Step 4: Determine the appropriate multiplying factor ( $MF$ ) from either Table 3-2 or using the formulae in Section 3.3.2 of the TSD.

a. Determine the percentile represented by the highest concentration in the sample data.

$$p_n = (1 - \text{Confidence Level})^{1/n}$$

where:  $p_n$  = Percentile represented by the highest concentration in the data  
 $n$  = number of samples  
Confidence Level = 0.95 i.e. 95%

b. Determine the multiplying factor ( $MF$ ), which is the relationship between the percentile described above ( $C_p$ ) and the selected upper bound of the lognormal effluent distribution, which in this case will be the 95<sup>th</sup> percentile ( $C_{95}$ ).

$$MF = \frac{C_{95}}{C_p} = \frac{e^{(Z_{95}\sigma + 0.5\sigma^2)}}{e^{(Z_p\sigma + 0.5\sigma^2)}}$$

where:  $Z_{95}$  is the standardized Z-score for the 95<sup>th</sup> percentile of the standardized normal distribution = 1.645

$Z_p$  is the standardized Z-score for the  $p^{\text{th}}$  percentile of the standardized normal distribution.(determined in (b) above)

*Note: The values of Z-scores are listed in tables for the normal distribution. If using Microsoft® Excel, this can be calculated using the NORMSINV function.*

$$\sigma^2 = \ln(CV^2 + 1)$$

$$\sigma = \sqrt{\ln(CV^2 + 1)}$$

Step 5: Multiply the highest value from the data set ( $C_{max}$ ) by the multiplying factor ( $MF$ ) determined in Step 4 to obtain the maximum receiving water concentration ( $RWC$ ).

$$RWC = C_{max} \times MF$$

Step 6:  $RWC \leq$  Derived limit ( $C_{efflm}$ ) implies that reasonable potential does not exist.

$RWC >$  Derived limit ( $C_{efflm}$ ) implies that reasonable potential exists.

2. Reasonable potential for Whole Effluent Toxicity (WET) may be determined from numerical data using the following procedure:

a. When the effluent data is given in terms of percent effluent as an  $IC_{25}$ ,  $LC_{50}$  and/or NOEC values:

Step 1: Convert the given values to toxic units:  $TU_a$  for acute data and  $TU_c$  for chronic data, respectively, using the following formulae. Please note that an NOEC derived using the  $IC_{25}$  is approximately the analogue of an NOEC derived using hypothesis testing. The  $IC_{25}$  is the preferred statistical method for determining the NOEC (EPA TSD, March 1991, p.6).

$$TU_a = \frac{100}{LC_{50}}$$

$$TU_c = \frac{100}{NOEC} \quad \text{or} \quad TU_c = \frac{100}{IC_{25}} \quad \text{if } IC_{25} \text{ available}$$

Step 2: Using DMR data or other data provided by the applicant, determine the total number of observations ( $n$ ) for a particular set of effluent data and determine the highest value ( $TU_{a, max}$  or  $TU_{c, max}$ ) from that data set.

Step 3: Determine the coefficient of variation ( $CV$ ) for the data set. For a data set where  $n > 10$ , the  $CV$  is calculated as standard deviation divided by mean. For data set where  $n < 10$ , the  $CV$  is estimated to equal 0.6. For less than 10 items of data, the uncertainty in the  $CV$  is too large to calculate a standard deviation or mean with sufficient confidence.

Step 4: Determine the appropriate multiplying factor ( $MF$ ) from either Table 3-2 or using the formulae in Section 3.3.2. (see iii.1, Step 4 above).

Step 5: Multiply the highest value of  $TU_{a, max}$  or  $TU_{c, max}$  from the data set by the multiplying factor ( $MF$ ) determined in Step 4 and the dilution at the edge of the mixing zone (the test concentration obtained from mixing zone modeling or demonstration) to obtain the

maximum receiving water concentration (*RWC*)

*RWC* for Acute Toxicity =  $[TU_{a, \max} * MF * \text{conc. at MZ boundary}]$

*RWC* for Chronic Toxicity =  $[TU_{c, \max} * MF * \text{conc. at MZ boundary}]$

Step 6: *RWC* for Acute Toxicity  $\leq 0.3TU_a$  implies that a reasonable potential does not exist  
*RWC* for Acute Toxicity  $> 0.3TU_a$  implies that a reasonable potential exists

*RWC* for Chronic Toxicity  $\leq 1.0TU_c$  implies that a reasonable potential does not exist  
*RWC* for Chronic Toxicity  $> 1.0TU_c$  implies that a reasonable potential exists

- b. When pass/fail effluent data only is available and all tests have passed, the Department may be able to determine reasonable potential in a manner similar to above assuming the test concentration of interest is greater than or equal to the concentration at which the permittee has tested. If the permittee has not tested at or above the test concentration of interest, the Department cannot say that reasonable potential does not exist, unless perhaps, circumstances related to the discharge have changed. If any failures exist in the data set, reasonable potential may be determined to exist.
- c. Other methods for determining reasonable potential may be used if appropriately justified.
- e. Consider Effluent Limitations Guidelines (ELG or Categorical guidelines)

The more stringent of the effluent limitations guidelines average and maximum derived limits and water quality-derived average and maximum limits shall be used as permit limits, unless other information indicates more stringent limits are needed (e.g. previous permit limits due to backsliding). Categorical limitations based on mass may be converted to concentration using the long-term average flow of the discharge for comparison to the monthly average and daily maximum derived limits.

1. For effluent guidelines based on production, limits will be calculated as follows:

$$ELG \text{ lim} = \sum (ELG_{prod})(ELG) \text{ where}$$

*ELGlim*: the mass limit, in lbs/day, for an applicable pollutant based on the production

*ELGprod*: the production rate, in lbs, for the applicable guideline(s), usually based on long-term average data

*ELG*: the effluent guideline limitation, given as a measure of production (e.g. lbs/1000 lbs), for an applicable pollutant

2. For effluent guidelines based on flow, limits will typically be calculated as follows:

$$ELG \text{ lim} = \sum (ELG_{flow})(ELG)(8.345)$$

*ELGlim*: the mass limit, in lbs/day, for the applicable pollutant based on the applicable flow

*ELGflow*: the long-term average process flow rate, in MGD, for the applicable guideline(s) (unless otherwise specified in the guideline)

*ELG*: the concentration limitation, in mg/l, for the applicable pollutant from the applicable guideline(s)

#### H. Other considerations

1. When the derived permit effluent limitation based on aquatic life numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying

statement in the permit that the practical quantitation limit using approved analytical methods shall be considered as being in compliance with the limit. Appropriate biological monitoring requirements shall be incorporated into the permit to determine compliance with appropriate water quality standards (R.61-68.E.14.c(2)).

2. When the derived permit effluent limitation based on human health numeric criteria is below the practical quantitation limit for a substance, the derived permit effluent limitation shall include an accompanying statement in the permit that the practical quantitation limit using approved analytical methods shall be considered as being in compliance with the limit (R.61-68.E.14.c(3)).
3. The effluent concentration limits determined above may not necessarily be the NPDES permit limit. NPDES Permit limits are determined after a reasonable potential analysis is conducted using these derived limits and also after evaluating other issues such as anti-backsliding and antidegradation.
4. When mass limits are calculated, the formula to be used is as follows.

$$\text{Mass (lb/day)} = \text{Flow (mgd)} * \text{Concentration (mg/l)} * 8.345$$

5. Per Regulation 61-9.122.45(d), for continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall unless impracticable be stated as maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works.
6. Antibacksliding: When a permit is reissued, the terms and conditions of the reissued permit must be at least as stringent as those final limits in the previous permit unless certain exceptions are met (see Regulation 61-9.122.44.I).

#### IV. PROCEDURES FOR REACHING A FINAL PERMIT DECISION

##### A. Comment Period (R.61-9.124.10 and 11)

The Department of Health and Environmental Control proposes to issue an NPDES permit to this applicant subject to the effluent limitations and special conditions outlined in this document. These determinations are tentative.

During the public comment period, any interested person may submit written comments on the draft permit to the following address:

SC Dept. of Health and Environmental Control  
Water Facilities Permitting Division  
Bureau of Water  
2600 Bull Street  
Columbia, South Carolina 29201

For additional information, interested persons may contact Melinda Vickers at 803-898-4186.

All written comments received during the public comment period shall be considered in making the final decision and shall be responded to as prescribed below.

Per R.61-9.124.17, the Department is only required to issue a response to comments when a final permit is issued. This response shall:

1. Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and
2. Briefly describe and respond to all significant comments on the draft permit raised during the public comment period, or during any hearing.

The response to comments shall be available to the public.

B. Public Hearings (R.61-9.124.11 and 12)

During the public comment period, any interested person may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Determinations and Scheduling.

1. Within the thirty (30) day comment period or other applicable comment period provided after posting or publishing of a public notice, an applicant, any affected state or interstate agency, the Regional Administrator or any other interested person or agency may file a petition with the Department for a public hearing on an application for a permit. A petition for a public hearing shall indicate the specific reasons why a hearing is requested, the existing or proposed discharge identified therein and specifically indicate which portions of the application or other permit form or information constitutes necessity for a public hearing. If the Department determines that a petition constitutes significant cause or that there is sufficient public interest in an application for a public hearing, it may direct the scheduling of a hearing thereon.
2. A hearing shall be scheduled not less than four (4) nor more than eight (8) weeks after the Department determines the necessity of the hearing in the geographical location of the applicant or, at the discretion of the Department, at another appropriate location, and shall be noticed at least thirty (30) days before the hearing. The notice of public hearing shall be transmitted to the applicant and shall be published in at least one (1) newspaper of general circulation in the geographical area of the existing or proposed discharge identified on the permit application and shall be mailed to any person or group upon request thereof. Notice shall be mailed to all persons and governmental agencies which received a copy of the notice or the fact sheet for the permit application.
3. The Department may hold a single public hearing on related groups of permit applications.
4. The Department may also hold a public hearing at its discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision;
5. Public notice of the hearing shall be given in accordance with R.61-9.124.10.

Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under R.61-9.124.10 shall automatically be extended to the close of any public hearing under this section. The hearing officer may also extend the comment period by so stating at the hearing.

A tape recording or written transcript of the hearing shall be made available to the public.

C. Obligation to raise issues and provide information during the public comment period. (R.61-9.124.13)



All persons, including applicants, who believe any condition of a draft permit is inappropriate or that the Department's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period (including any public hearing). No issue shall be raised during an appeal by any party that was not submitted to the administrative record as part of the preparation and comment on a draft permit, unless good cause is shown for the failure to submit it. Any supporting materials which are submitted shall be included in full and may not be incorporated by reference, unless they are already part of the administrative record in the same proceeding, or consist of State or Federal statutes and regulations, Department and EPA documents of general applicability, or other generally available reference materials. Commenters shall make supporting materials not already included in the administrative record available. (A comment period longer than 30 days may be necessary to give commenters a reasonable opportunity to comply with the requirements of this section. Additional time shall be granted under R.61-9.124.10 to the extent that a commenter who requests additional time demonstrates the need for such time).

D. Issuance and Effective Date of the Permit

1. After the close of the public comment period on a draft permit, the Department shall issue a final permit decision. The Department shall notify the applicant and each person who has submitted written comments or requested notice of the final permit decision. This notice shall include reference to the procedures for appealing a decision on a permit. For the purposes of this section, a final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit.
2. A final permit decision shall become effective 30 days after the service of notice of the decision unless:
  - (a) A later effective date is specified in the decision; or
  - (b) No comments requested a change in the draft permit, in which case the permit shall become effective on the effective date shown in the issued permit.
3. Issuance or Denial of Permits. An appeal to a final determination of the Department or to a condition of a permit issued or the denial of a permit pursuant to the State law and Regulation 61-9, shall be in accordance with and subject to 48-1-200 of the SC Code (see E below).

E. Adjudicatory Hearings

The issuance of this permit by the S.C. Department of Health and Environmental Control (Department) becomes the final agency decision 15 days after notice of the decision has been mailed to the applicant or respondent, unless a written request for final review is filed with the Department.

An applicant, permittee, licensee, or affected person who wishes to appeal this decision must file a written request for final review with the Clerk of the Board at the following address or by facsimile at 803-898-3323:

Clerk of the Board  
SC DHEC  
2600 Bull Street  
Columbia, SC 29201

The request for final review should include the following:

1. The grounds on which the Department's decision is challenged and the specific changes sought in the decision,
2. A statement of any significant issues or factors the Board should consider in deciding how to handle the matter,

and

3. A copy of the Department's decision or action under review.

If the 15th day occurs on a weekend or State holiday, the request is due to be received by the Clerk of the Board on the next working day. The request for final review must be received by the Clerk of the Board by 5:00 p.m. on the date it is due. If a timely request for final review is filed with the Clerk of the Board, the Clerk will provide additional information regarding procedures.

The Board of Health and Environmental Control has 60 days from the date of receipt of a request for final review to conduct a final review conference. The conference may be conducted by the Board, its designee, or a committee of three members of the Board appointed by the chair.

If a final review conference is not conducted within 60 days, the Department decision becomes the final agency decision, and a party may request a contested case hearing before the Administrative Law Court within 30 days after the deadline for the final review conference.

Information pertaining to adjudicatory matters may be obtained by contacting the Legal Office of the Department of Health and Environmental Control, 2600 Bull Street, Columbia, South Carolina or by calling 803-898-3350.